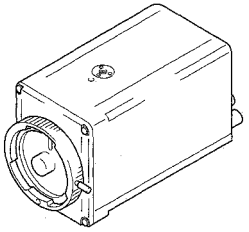
SONY

3CCD COLOR VIDEO CAMERA

DXC-950
DXC-950P
DXC-970MD

SERVICE MANUAL



SAFETY RELATED COMPONENT WARNING

Components identified by shading and ⚠ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

TABLE OF CONTENTS

SECTION 1
OPERATING INSTRUCTIONS

This section is extracted from instruction manual.

Symbols on the unit

Symbol	Location	This symbol indicates
	Bottom	Type B equipment classified in accordance with IEC Publication 601-1 Safety of medical electrical equipment.
	Top	This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.
	Rear panel	This symbol indicates that a direct current (DC) is input.
	Rear panel	The connector that outputs RGB signals and their respective sync signals.
	Rear panel	The connector that outputs composite video signals from the camera module.
	Rear panel	The connector to which a remote control signal is input from a remote control unit.
	Rear panel	The button for setting the automatic white balance.
	Rear panel	The connector that inputs a trigger signal from a flash slave unit. The button for activating the flash when in the flash mode.

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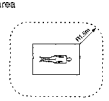
DXC-950P only

Important safeguards/notices for use in the medical environments

1. All equipment connected to this unit shall be certified according to Standard IEC601-1, IEC950, IEC65 or other IEC/ISO Standards applicable to the equipments.
2. When this unit is used together with other equipment in the patient area*, the equipment shall be either powered by an isolation transformer or connected via an additional protective earth terminal to ground the system unless it is certified according to Standard IEC601-1.

   *Patient area



3. The leakage current could increase when connected to other equipment.
4. The operator should take care not to touch the rear panel input and output connectors and the patient at the same time.

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Features

High image quality

DXC-950:

The DXC-950 3-CCD color video camera produces high-quality images thanks to its ½-inch, three-chip Power HAD[1] CCD[2], containing some 380,000 effective picture elements (pixels). The camera has four features that ensure high image quality:

- High horizontal resolution: 750 TV lines
- High sensitivity (defined as minimum required illumination): 2,000 lux at F9.5
- High signal-to-noise ratio: 60 dB
- Low smear

DXC-950P:

The DXC-950P 3-CCD color video camera produces high-quality images thanks to its ½-inch, three-chip Power HAD[1] CCD[2], containing some 380,000 effective picture elements (pixels). The camera has four features that ensure high image quality:

- High horizontal resolution: 750 TV lines
- High sensitivity (defined as minimum required illumination): 2,000 lux at F8.5
- High signal-to-noise ratio: 58 dB
- Low smear

DXC-970:

The DXC-970MD 3-CCD color video camera produces high-quality images thanks to its ½-inch, three-chip Power HAD[1] CCD[2], containing some 380,000 effective picture elements (pixels). The camera has four features that ensure high image quality:

- High horizontal resolution: 750 TV lines
- High sensitivity (defined as minimum required illumination): 2,000 lux at F9.5
- High signal-to-noise ratio: 60 dB
- Low smear

Compact and lightweight

The camera is very compact (70 × 72 × 123.5 mm) and very light (670 g), allowing for easy installation into places where space is a problem.

The following are some examples of application:

- As a permanent fixture in theaters, concert halls, etc. *
- As a ceiling camera in halls for special events *
- As a camera used in video conference systems *
- As a camera for a microscope
- As a roof-top weather monitoring camera *
- As a laboratory monitor camera

*:DXC-950/950P

Broad exposure control

Thanks to the AGC (Automatic Gain Control) and CCD iris control functions, the camera can handle a broad range of subject lighting conditions. When shooting in poor lighting conditions, the AGC feature automatically increases the sensitivity up to eight times. When the amount of light is excessive, the CCD iris control function automatically increases the shutter speed to cut exposure. This function can cut the exposure to the equivalent of up to 6 aperture stops. When using this camera in a fixed location, AGC, CCD iris control and auto-iris control allow for shooting in a broad range of lighting conditions. Combined use of AGC and CCD iris control is also be very helpful when using the camera in a microscope system.

1) Power HAD: Power Hole-Accumulated Diode (Power HAD is a registered trademark of Sony.)

2) CCD: Charge-Coupled Device

Electronic shutter

The wide range of speeds in the electronic shutter helps you overcome difficult shooting conditions, minimizes blurring in fast-moving subjects, and produces acceptably bright still images of subjects shot in poor light. When set to flickerless mode, the electronic shutter allows you to take flickerless images even under fluorescent light. When you use the electronic shutter in the clear scan mode, you can shoot computer screen displays without horizontal stripes or distortion.

Useful extensions for building a sophisticated camera system

- The unit outputs four different types of video signals (composite, Y/C, RGB, and component) for connection to various types of video monitors, VCRs, and other video equipment.
- An RM-930 or RM-C950 remote control unit (not supplied) can be connected to the camera.
- **DXC-950/950P: Connecting a CCU-M5/M5P camera control unit (not supplied) to the camera will permit image signal transmission over along cable (up to 300 m [984 feet]).**

Precautions

This Sony product has been designed with safety in mind. However, if not used properly, electrical products can cause fires which may lead to serious bodily injury.
To avoid such accidents, be sure to heed the following.

Heed the safety precautions

Be sure to follow the general safety precautions on pages 4, 5, 9, 10, 11, and in the "Operating Precautions" section on page 12.

In case of a breakdown

In case of system breakdown, discontinue use and contact your authorized Sony dealer.

In case of abnormal operation

- If the unit emits smoke, unusual sounds or smells,
- If water or other foreign objects enter the cabinet, or
- If you drop the unit or damage the cabinet:

1 Cut the power supplied to the unit.

2 Disconnect the DC power cord.

3 Contact your authorized Sony dealer or the store where you purchased the product.

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Safety Precautions

Note

To ensure the safe operation of this unit, be sure to heed the following precautions.

Do not allow foreign matter to enter the unit

Allowing water or other foreign matter to enter the cabinet may lead to fire. If water or other foreign objects happen to enter the cabinet, switch off the power supplied to the unit, disconnect the DC power cord or connection cables and contact your authorized Sony dealer.

Do not dismantle or modify the unit

Disassembly or modification of the unit may lead to fire and/or injury. Leave all adjustments, inspections and repairs of internal components to your authorized Sony dealer.

Be sure to install the unit properly

For queries on installation, contact the store where you purchased the product, or contact your authorized Sony dealer.
When attaching the unit to a wall or ceiling, make sure the point of attachment has sufficient strength to support the weight of the unit and mounting bracket. If the point of attachment lacks sufficient strength, the unit may fall, resulting in severe injury. Check the mounting bracket once a year to see that it remains tight.

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Precautions

Use recommended power supplies

Be sure to use the power supply (camera adaptor) specified in this manual. An unspecified power supply used with this unit may become a fire hazard.

Use recommended DC cables and connection cables

Use of DC cables and connection cables other than those specified in this manual may lead to fire.

Take care not to damage cables

Use of damaged DC cables can lead to fires. Take special note of the following:

- Take care not to wedge cables between equipment and racks, walls, etc., during installation.
- Do not modify the DC cables and take care not to damage them.
- Do not place heavy objects on the cables or pull them with excessive force.
- Do not place the cables near heating devices or other heat sources.
- When disconnecting a cable, always pull from the plug; not the cable itself.
- If the DC cables become damaged, discontinue use contact your authorized Sony dealer for a replacement. Continued use of damaged cables may lead to fire.

Do not install or operate in environments subject to high levels of smoke, steam, humidity or oil

Operation in any of the above environments may lead to fire. Use of this product in environments other than those specified in this manual may lead to fire.

Do not place the unit on an unstable base

The unit may fall, causing physical injury if used in any of the following places:

- On top of a shaky, unstable table
- On inclined surfaces
- In places subject to vibration or shock

Check that the place of attachment is strong enough to support the weight of this unit, and that the unit and attachment device are secure.

Be sure that the lens is screwed on properly

Always be sure that the lens is mounted securely. A loosely attached lens may come loose and fall, resulting in personal injury.
Check to see that the lens remains attached firmly once every year.

Disconnect the DC cable and connection cables before moving the unit

If the unit is moved with the DC power cable and connection cables still attached, the cables may be damaged, resulting in fire.

Operating Precautions

Operating or storage location

Avoid operating or storing the camera in the following locations:

- Extremely hot or cold places (Operation temperature: –5°C to +45°C [23°F to 113°F])
- In direct sunlight for long periods, or close to heating equipment (e.g., near heaters)
- Close to sources of strong magnetism
- Close to sources of powerful electromagnetic radiation, such as radios or TV transmitters

Ventilation

To prevent internal heat buildup, do not block air circulation around the camera.

Connections

Do not connect the CCU connector and the ⎓ DC IN/ REMOTE connector simultaneously. If they are connected simultaneously, the unit may be damaged.

Transportation

When transporting the camera, repack it as originally packed at the factory or in materials equal in quality.

Cleaning

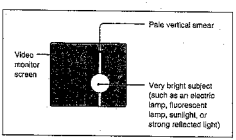
- Use a blower to remove dust from the lens or optical filter.
- Use a soft, dry cloth to clean the external surfaces of the camera. If it is very dirty, use a soft cloth dampened with a small quantity of neutral detergent, then wipe dry.
- Do not use volatile solvents such as alcohol, benzene or thinners as they may damage the surface finish.

Typical CCD Phenomena

The following phenomena may appear on the monitor screen while you are using the DXC-950/950P/970MD camera. These phenomena stem from the high sensitivity of the CCD image sensors, and do not indicate fault within the camera.

Vertical smear

A "smear" may appear to extend vertically from very bright subjects, as shown below.



This phenomenon is common to CCD imaging elements using an interline transfer system, and is caused when an electric charge induced by infrared radiation deep within the photosensor is transferred to the resistors.

Aliasing

When shooting fine stripes, straight lines or similar patterns, the lines may become slightly jagged.

Blemishes

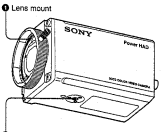
A CCD image sensor consists of an array of individual picture elements (pixels). A malfunctioning sensor element will show up as a single pixel blemish in the image. This is generally not a problem.

White speckles

When you shoot a poorly illuminated object at a high temperature, small white dots may appear all over the entire screen image.

Location and Function of Parts and Controls

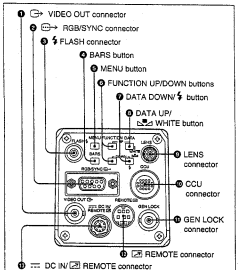
Front Panel/Top Panel/Bottom Panel



❶ Lens mount
Attach a zoom lens or microscope adaptor.

❷ Installation/tripod holes (top/bottom)
Use these holes when attaching the camera to a wall or ceiling or tripod (screw: 1/4", 20 ridges).

Rear Panel



Note

Before connecting video equipment, see "Important safeguards/ notices for use in the medical environment" on page 5.

❶ VIDEO OUT (output) connector (BNC-type)
Outputs (composite) video signals from the camera module.

❷ RGB/SYNC (RGB/sync signal output) connector (D-sub 9-pin)
Outputs RGB signals and their respective sync signals. Use a CCXC-9DB/CCXC-9DD/CCMC-9DS cable for the connections.

Pin assignment

Pin No.	Signal	Pin No.	Signal
1	GND	6	VBS (Y) output
2	GND	7	SYNC/WEN output
3	RED (R-Y) output	8	GND
4	GREEN (G) output	9	NC (C output)
5	BLUE (B-Y) output		

Location and Function of Parts and Controls

❸ ϟ FLASH (sync) connector
Connects to a flash slave unit when the camera is in the flash mode.

❹ BARS (color bars output) button
Pressing this button for one second outputs the color bars signal. Press again to revert to video signal output.
For monitor adjustment, contact your authorized Sony dealer.

❺ MENU (menu recall) button
Pressing this button for one second brings up the operational settings menu on the monitor connected to the camera. Press again to hide the menu.
For menu operation, see "Changing the Camera Settings" on page 33.

❻ FUNCTION UP/DOWN (cursor up/down) buttons
UP button: moves the menu cursor upwards.
DOWN button: moves the menu cursor downwards.

❼ DATA DOWN (setting value reduction)/ ϟ (flash) button
With the menu displayed: decreases the setting value.
With the menu hidden: activates the flash button when in the flash mode.

❽ DATA UP/ WHITE (setting value increase/ white balance adjustment) button
With the menu displayed: increases the setting value.
With the menu hidden: activates the automatic white balance adjustment function.

❾ LENS connector (6-pin)
Connects to a lens cable when a $^2/_3$-inch zoom lens is used. This connector is not used for $^1/_2$-inch zoom lenses.

❿ CCU (camera control unit) connector (20-pin)
DXC-950/950P:Connects with the CCU-M5/M5P camera control unit (not supplied).
DXC-970MD:Reserved for future use.

⓫ GEN LOCK (reference sync signal input) connector (BNC-type)
Inputs reference sync signals synchronized camera operation.

⓬ REMOTE (remote control) connector (mini-DIN 8-pin)
Connects to an RM-C950 remote controller (not supplied).

⓭ ⎓ DC IN/ REMOTE (DC power input/remote control) connector (12-pin)

DXC-950:
Connects to a CMA-D2 camera adaptor (not supplied) or an RM-930 remote control unit (not supplied).

DXC-950P:
Connects to a CMA-D2CE/D2MDCE camera adaptor (not supplied) or an RM-930 remote control unit (not supplied).
- Use the CMA-D2CE if you are using a DXC-950P for non-medical purposes.
- Use the CMA-D2MDCE if you are using a DXC-950P for medical purposes.

DXC-970MD:
Connects to a CMA-D2MD camera adaptor (not supplied) or an RM-930 remote control unit (not supplied).

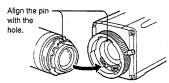
Installation

Mounting the Lens

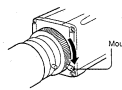
Only 1/3-inch bayonet-mount lenses can be attached to the camera.
For 2/3-inch lenses, an LO-32BMT lens mount adaptor (not supplied) is required.

1 Turn the mount lever counterclockwise as far as it goes. (If the lens mount cap is in place, remove it.)

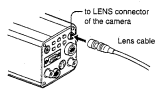
2 Align the positioning pin on the lens with the matching hole in the lens mount and attach the lens.



3 Turn the mount lever clockwise as far as it goes to lock the lens in the lens mount.



4 If the lens is a 2/3-inch type, connect the lens cable to the camera's LENS connector.
(This step in not necessary for 1/3-inch lenses.)



Mounting a Microscope Adaptor

To attach the camera to a microscope, it is necessary to first mount an appropriate adaptor. The method for mounting these adaptors is the same as for lenses.
For more details, refer to the manual for each adaptor.

Mounting on a Tripod

To mount the camera on a tripod, use the screw hole in the bottom of the camera body.

Mounting screw to be used
U1/4", 20 UNC
ℓ: 4.5 ± 0.2 mm (ISO standard)
ℓ: 0.197 inches (ASA standard)

Attaching to a Wall or Ceiling

To attach the camera on a wall or ceiling, use the appropriate bracket and mounting screws (1/4", 20 ridges).
For more details, contact your authorized Sony dealer.

Basic System Connection

(for DXC-950)

To supply power to the camera, use the CMA-D2 camera adaptor (not supplied).
There are two connection methods, one using a CCDC cable and the other using a CCMC cable. The CCDC cable only supplies power to the camera. The CCMC cable supplies power to the camera and transmits video signals from the camera back to the camera adaptor.

(for DXC-950P)

To supply power to the camera, use the CMA-D2CE/D2MDCE camera adaptor (not supplied).
There are two connection methods, one using a CCDC cable and the other using a CCMC cable. The CCDC cable only supplies power to the camera. The CCMC cable supplies power to the camera and transmits video signals from the camera back to the camera adaptor.

Power supply

Use only with the following camera adaptor or camera control unit according to the use.

Camera adaptor or camera control unit	
For medical use	For non-medical use
CMA-D2MDCE	CMA-D2CE CCU-M5P

For more details, contact your Sony dealer.

(for DXC-970MD)

To supply power to the camera, use the CMA-D2MD camera adaptor (not supplied).
There are two connection methods, one using a CCDC cable and the other using a CCMC cable. The CCDC cable only supplies power to the camera. The CCMC cable supplies power to the camera and transmits video signals from the camera back to the camera adaptor.

Note on use of camera adaptors

Although the CMA-D2 camera adaptor has two CAMERA connectors (4-pin and 12-pin), the power consumption of the DXC-950 is such that two camera units cannot be connected at the same time. Be sure to use one camera adaptor for each DXC-950 unit.

Note on connections

Be sure to turn off power supply for all equipment before making any connections.

Note on use of camera adaptors

Although the CMA-D2CE/D2MDCE camera adaptor has two CAMERA connectors (4-pin and 12-pin), the power consumption of the DXC-950P is such that two camera units cannot be connected at the same time. Be sure to use one camera adaptor for each DXC-950P unit.

Note on connections

Be sure to turn off power supply for all equipment before making any connections.

Note on use of camera adaptors

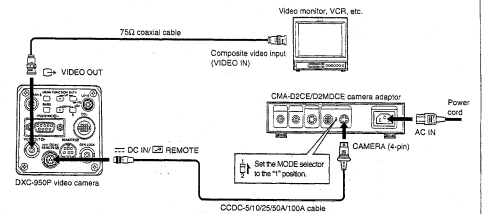
Although the CMA-D2MD camera adaptor has two CAMERA connectors (4-pin and 12-pin), the power consumption of the DXC-970MD is such that two camera units cannot be connected at the same time. Be sure to use one camera adaptor for each DXC-970MD unit.

Note on connections

Be sure to turn off power supply for all equipment before making any connections.

Connecting to Video Equipment With Composite Video Input Connectors

Connecting using a CCDC cable

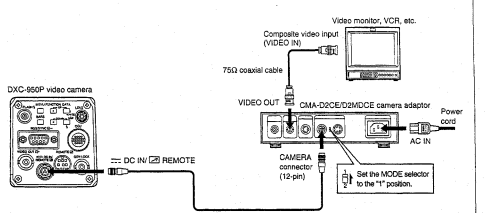


Note

Before connecting video equipment, see "Important safeguards/notices for use in the medical environments" on page 5.

Setup using a CCDC cable (for supplying power only)

Connecting using a CCMC cable



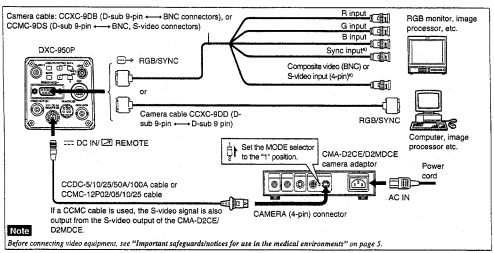
Note

Before connecting video equipment, see "Important safeguards/notices for use in the medical environments" on page 5.

Setup using a CCMC cable (for supplying power to cameras and video signals to the camera adapter)

Basic System Connection DXC-950P and CMA-D2CE/D2MDCE can be replaced with DXC-950/970MD and CMA-D2/CMA-D2MD.

Connecting to Video Equipment With RGB or S-Video Inputs



Before connecting video equipment, see "Important safeguards/notices for use in the medical environments" on page 5.

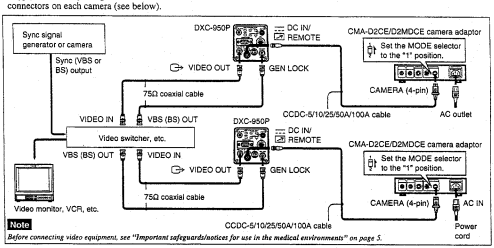
a) When using a video monitor without a sync signal input connector, the camera can be set to output a sync signal with the G signal (G.SYNC).
For details, see page 44.

b) This setup is for connecting to a composite video (VBS) connector. To send separated Y/C signals to the S-video input of video equipment, use a CCMC-9DS camera cable.
For details on switching camera output between VBS (composite video) and Y/C, see page 45.

Connections for a Multi-Camera System

Notes on multi-camera systems

Take the following steps to prevent flicker when switching between two or more cameras connected to a video switcher:
- Supply the same sync signal to the GEN LOCK connectors on each camera (see below).
- Adjust the subcarrier and horizontal synchronization phases for all cameras.
For more details, see "Adjusting the Picture Tone in a Multi-Camera System" on page 52.



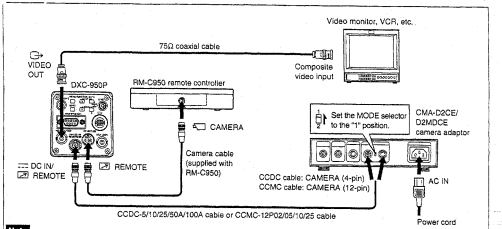
Before connecting video equipment, see "Important safeguards/notices for use in the medical environments" on page 5.

Connecting to a Remote Controller

You can connect a remote controller (the RM-930 or RM-C950) to the camera module.

DXC-950P and CMA-D2CE/D2MDCE can be replaced with DXC-950/970MD and CMA-D2/CMA-D2MD.

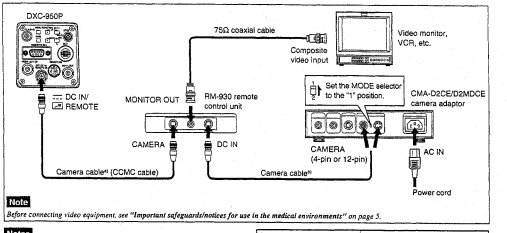
Connecting to the RM-C950 Remote Controller



Note

Before connecting video equipment, see "Important safeguards/notices for use in the medical environments" on page 5.

Connecting to the RM-930 Remote Control Unit



Note

Before connecting video equipment, see "Important safeguards/notices for use in the medical environments" on page 5.

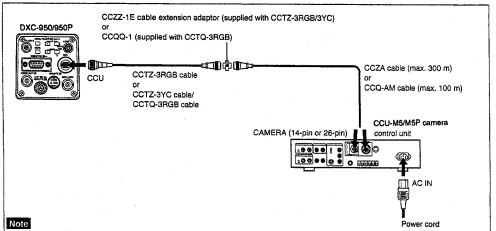
Notes

- When using the RM-930, use the camera cables as shown in the table on the right.
- When using the MONITOR OUT connector of the RM-930, set D-sub out to VBS on the on-screen menu.

Camera cable[a]	Camera cable[b]
CCMC-12P02/05/10	CCMC-12P02/05/10/25 CCDC-5/10/25/50A
CCMC-12P25	CCMC-12P02/05/10 CCDC-5/10/25/50A

Connecting to a Camera Control Unit

DXC-950/950P only

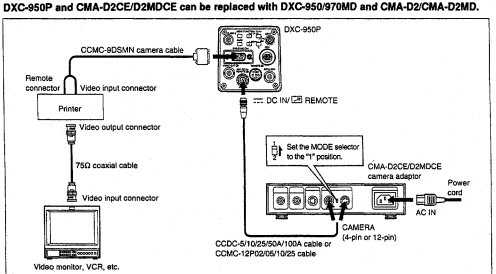


Note

Never connect a CCU-M5/M5P camera control unit and a CMA-D2/D2CE/D2MDCE camera adaptor/RM-930 remote control at the same time; doing so could damage the equipment.

Connecting to a Printer

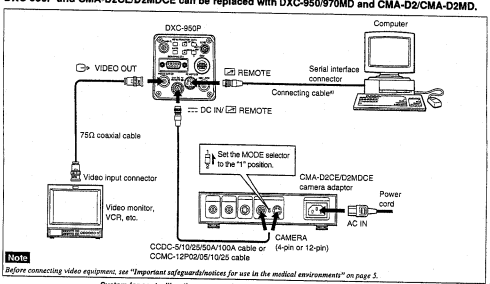
DXC-950P and CMA-D2CE/D2MDCE can be replaced with DXC-950/970MD and CMA-D2/CMA-D2MD.



System for connecting to a printer

Connecting to a Computer

DXC-950P and CMA-D2CE/D2MDCE can be replaced with DXC-950/970MD and CMA-D2/CMA-D2MD.



System for controlling the camera with a computer using an RS-232C command

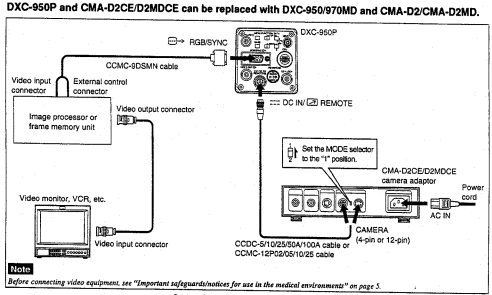
a) Always use a specified shielded cable when connecting the unit to a computer.

Note

For more details on RS-232C protocols and cables for connection to a computer, contact your authorized Sony dealer.

Connections for Long Exposure Shooting

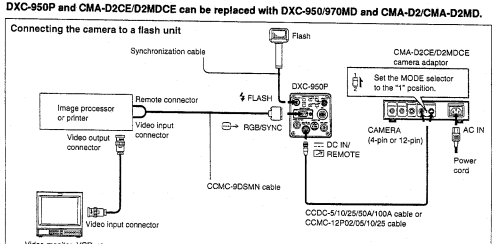
DXC-950P and CMA-D2CE/D2MDCE can be replaced with DXC-950/970MD and CMA-D2/CMA-D2MD.



System for shooting using long exposure

Connecting to a Flash Unit

DXC-950P and CMA-D2CE/D2MDCE can be replaced with DXC-950/970MD and CMA-D2/CMA-D2MD.

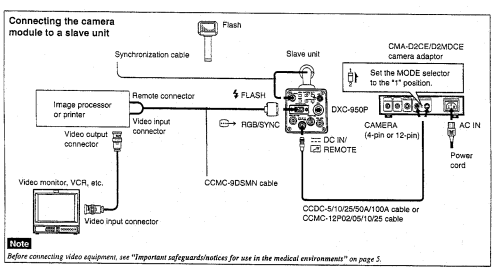


Master mode connection

Note

Only a limited selection of printers may be connected to the DXC-950P. For details, connect your authorized Sony dealer.

31



Slave mode connection

Note

Only a limited selection of printers are directly compatible with the DXC-950P. For details, connect your authorized Sony dealer.

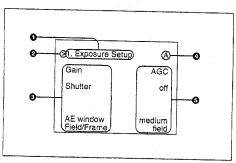
32

Changing the Camera Settings

Camera operational settings can be changed through simple adjustment of the settings on the on-screen menus. Settings can be adjusted to get the best possible results for the given shooting conditions or to enhance the image with special effects.
There are four menu pages.

To display the menu

Press and hold down the MENU button for one second. The menu is displayed on the screen.



Menu

1 Menu page
Displays the selected menu page.

Menu page	Settings
1. Exposure Setup (page 1)	Exposure-related items, such as gain and shutter
2. Color Setup (page 2)	Color-related items, such as white balance
3. General Setup (page 3)	General items
4. System Setup (page 4)	System items, such as memory and output signals

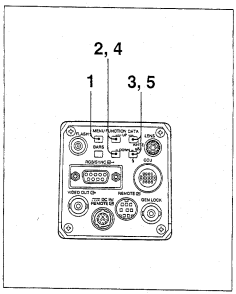
2 Cursor
Selects an item. Move the cursor up/down using the FUNCTION UP/DOWN buttons.

3 Settings items
Scroll through the items to be set with the FUNCTION UP/DOWN buttons.

4 Settings memory
Indicates the settings memory bank (A or B). Flashes if "Mem.Protect" has been set to on.
For more details, see "Menu Settings" on page 44.

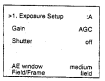
5 Settings values
Change the values using the DATA UP/DOWN buttons.

Menu Operation (Changing the Settings)



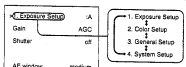
The settings on the menu can be changed as follows:

1 Press and hold down the MENU button for one second. The menu page that was selected last is displayed on the monitor screen.



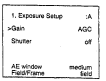
2 Press the FUNCTION UP button to bring the cursor to the first line.

3 Press the DATA UP or DOWN button to select a page.

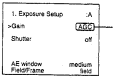


Changing the Camera Settings

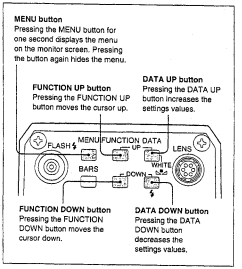
4 Press the FUNCTION UP or DOWN button to select the item to be set.



5 Press the DATA UP or DOWN button to change the value.

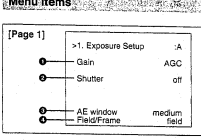


Menu operation buttons



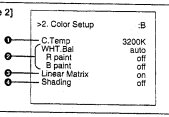
Menu Items

[Page 1]



Menu Item	Function	Page No.
❶ Gain	Adjusts the video gain.	39
❷ Shutter	Sets the electronic shutter, the long-term accumulation and the CCD iris.	39
❸ AE window	Selects the AE window when in the AGC, CCD iris or auto iris modes.	41
❹ Field/Frame	Switches between frame accumulation and field accumulation.	41

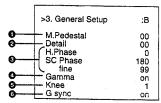
[Page 2]



Menu Item	Function	Page No.
❶ C.Temp	Selects 3200K or 5600K in accordance with the lighting conditions.	42
❷ WHT.Bal	Selects the white balance settings (auto/manual/auto tracing).	42
❷ Linear Matrix	Rectifies color balance through application of a linear matrix.	42
❸ Shading	Rectifies shading.	42

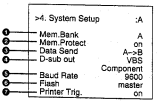
Changing the Camera Settings

[Page 3]



Menu item	Function	Page No.
❶ M.Pedestal	Synchronizes the output signal pedestal with the RGB signal.	43
❷ Detail	Adjusts the outline emphasis.	43
❸ H.Phase/ SC Phase/ SC fine	Adjusts the difference in phase of the subcarrier and the horizontal synchronization during external synchronization. **Note** When there is no synchronization, H.Phase, SC Phase and SC fine cannot be set, and "–" appears.	43
❹ Gamma	Compensates gamma (on/off).	44
❺ Knee	Selects image compression characteristics when shooting very bright objects.	44
❻ G sync	Adds a sync signal to the G (green) channel of the RGB output.	44

[Page 4]



Menu Item	Function	Page No.
❶ Mem.Bank	Selects memory bank A or B.	44
❷ Mem. Protect	Protects memory bank A or B.	44
❸ Data Send	Copies settings values form memory A → B or B → A.	45
❹ D-sub out	Selects VBS or Y/C, RGB or component output.	45
❺ Baud Rate	Selects the baud rate (RS-232C baud rate).	45
❻ Flash	Selects the flash mode (master/ slave).	45
❼ Printer Trig.	Triggers a printer.	46

Menu Settings

1. Exposure Setup menu (page 1)

Gain [AGC/step/ISO]
Adjusts video gain.

AGC	Automatic gain control. Automatically adjusts the gain of the video signal in accordance with the brightness of the subject. This function is useful for shooting subjects under changing lighting conditions.
step	Sets the video gain to manual control. Use this function for shooting in extremely dark places where even fully opening the lens iris still does not produce an acceptably bright image. The gain level can be set in the range of 0 to 18 dB in units of 1 dB.
ISO	Sets the video gain to the desired level in the ISO sensitivity display (frame mode). The gain level can be set to 400, 800, or 1600. In the field mode, the real value is twice the displayed value. When used with a still-image camera (for example, a single-lens reflex camera), this item serves as a reference for approximate exposure settings. For greater accuracy, check the exposure level with an exposure meter as this value may change depending on the lighting conditions.

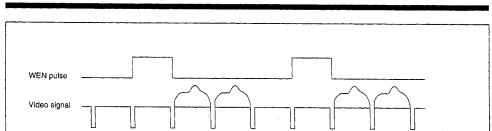
Shutter [off/long exp/step/c.scan/CCD-IRIS]
The electronic shutter allows for blur-free images of fast-moving subjects and, if used in combination with the frame memory, produces good still images of subjects shot in poor lighting conditions.

off	Deactivates the electronic shutter.
long exp	Sets the shutter speed in units of 1 frame. Range: Field mode: 1 – 255 FRM (frames) Frame mode: 2 – 256 FRM (frames) *For more details on field and frame modes, see page 94.* For example, if the value is set to 050 frames (about 1.7 seconds in the NTSC format), the total amount of video signals accumulated during this set time is output in the form of one complete field (or one still frame) at intervals of about 1.7 seconds. These pictures, which contain 50 frames of video information, are much brighter than normal one-frame images. This mode of setting the shutter speed is very useful for shooting a poorly illuminated subject in a dark place. The WEN (timing) video signals can be output from the RGB/SYNC ⊐+ connector at the back of the unit. This function synchronizes an external frame memory with the timing pulse to allow for image processing or image analysis. **Shutter speed calculation** **Example:** Shutter speed when unit set at 005 frames: 005 × 1/30 = 0.1666 seconds *(continues)*

long exp *(cont.)*	**booster [on/off]** When camera is in the "long exp" mode, this function lets you to set the focus or color for subjects in poor lighting conditions by allowing 4 FRM (frames) accumulation and gain adjustment. In such situations, set "booster" to on, set the focus and color, and then turn it off. You can then shoot in the long exposure mode. **sync/w.en [sync/w.en]** This function lets you change the output from the RGB/SYNC ⊐+ connector on the rear panel. It is only enabled when the unit is in the "long exp" mode. **sync** – Outputs a composite sync signal. This is the normal setting. **w.en** – Outputs a WEN (timing) pulse. Use this function to synchronize a connected frame memory. **Notes** • When the camera is set to "long exp", AGC, CCD IRIS, AUTO IRIS (located on remote control unit) cannot be used. When in the "long exp" mode, use the GAIN in "step" or "ISO" and set the IRIS to MANUAL. • This function is enabled only when both "Flash" and "Printer Trig." are set to off.
step	Sets the shutter to one of the following eight speeds: FL (flickerless), 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, or 1/10000. When using the DXC-970MD with 50 Hz lighting power, setting the shutter to FL gives you flickerless images even under fluorescent light.

c.scan	Sets the shutter speed in units of 1 H (horizontal scanning time; 63.56 µs). The shutter speed can be set to anywhere between 1/525 – 260/525 H. The setting is made in units of 1 H. This setting can be used to reduce noise (horizontal patterns) when shooting a computer screen. To find the most appropriate setting, use the DATA UP/DOWN buttons to change the setting while observing the noise on a monitoring screen. **Shutter speed calculation** **Example:** Shutter speed in 250/525 (H) 250 × 63.56 µS (1 H) + 34.78 µs (constant) = 15924.78 µs = about 0.016 seconds
CCD-IRIS	When an excessive amount of light passes through the lens, this function increases the shutter speed to cut exposure to the equivalent of up to 6 aperture stops. The function is useful for microscope applications where lighting that is just right for the human eye often is too bright for the video camera. When CCD-IRIS is set to ON, the excessive incident light is automatically decreased to an appropriate level for the video camera. The CCD iris function is also useful for cutting out excess incident light that is not cut out by the auto-iris lens in scenes containing very bright patches (such as snow, or sea water reflecting sunlight). You can use CCD-IRIS in combination with AGC, and/or auto-iris control.

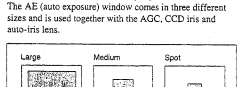
Changing the Camera Settings



Timing chart in long exp. mode of the electronic shutter (2 FRM)

AE window [large/medium/spot]

The AE (auto exposure) window comes in three different sizes and is used together with the AGC, CCD iris and auto-iris lens.



AE windows

Field/Frame [field/frame]

Selects frame accumulation or field accumulation.

field	Eliminates blur when shooting fast-moving subjects. The CCD accumulates charges by field units to make images show a minimum of blur even when the subject is moving fast.
frame	Produces images with the highest possible vertical resolution. In this mode, the CCD changes the line that reads the signal for each field and accumulates charges in frame units. Select this setting when using the camera together with measuring instruments that feature memory functions, systems with image-processing or analysis functions or a still-image processing system.

2. Color Setup menu (page 2)

C.Temp (color temperature) [3200K/5600K]

Selects the color temperature accordance to the lighting.

3200K	Use for indoor shooting.
5600K	Use for outdoor shooting.

WHT.Bal (white balance) [auto/manu/ATW]

Selects the white balance settings.

auto	Use for automatic adjustment of the white balance.	
manu	Use for manual adjustment of white balance. Both red gain (R gain) and blue gain (B gain) are adjustable.	
	R gain	Adjusts the red gain (–99 to +99).
	B gain	Adjusts the blue gain (–99 to +99).
ATW	Activates the auto-tracing white balance. This mode is suitable when the light source changes. The white balance is automatically adjusted as the color temperature changes.	
	Paint If "WHT.Bal" is set to auto or ATW, use this to fine adjust the white balance. If auto or ATW is selected, the "R paint" and "B paint" values are displayed on the menu. Adjust these while looking at the screen.	
	R paint	Adjusts the red paint (–7 to +7).
	B paint	Adjusts the blue paint (–7 to +7).

Linear Matrix [on/off]

Processes images with a color matrix is processed to produce natural colors.

on	Activates the matrix processing function.
off	Deactivates the matrix processing function.

Shading [off/1 to 99]

If the camera unit is attached to a microscope, a green color may appear at the top of the screen while a magenta color may appear at the bottom. To eliminate these colors, use the Shading (1 to 99) function. Adjust the colors while looking at the screen. If the colors become darker when this function is turned off, contact your authorized Sony dealer.

3. General Setup menu (page 3)

M.Pedestal [–99 to +99]
Adjusts the darkness level of the black parts of the image. Use this function to bring out details of heavily shaded areas. Use of a waveform monitor will make the adjustment easier. Normally set to 0.

+	Lighter
–	Darker

Detail [–99 to +99]
Adjusts the sharpness of the object outlines of an image.

+	Sharper with more detail on the image outline.
–	Softer with less detail.

H.Phase [–99 to +99]
When an external reference sync signal for locking the camera sync generator is input to the GEN LOCK connector on the rear panel, the camera operates at the frequency of the reference signal. You can use the H.Phase function to perfectly synchronize the camera operation with the reference signal to the level of the horizontal phase.

Note
If there is not an external sync signal, no value is displayed.

SC Phase [0/180], (SC)fine [–99 to +99]
When locking the camera sync generator, use the SC Phase function to adjust the subcarrier phase. First set to between 0° and 180° for rough adjustment, then use (SC)fine for fine adjustment.

Note
If there is no external sync signal, no value is displayed.

Gamma [on/off]
Compensates gamma.

on	Compensates the reproduction characteristics of the screen to produce natural-tone images. Use this setting for normal camera use.
off	Outputs the video signal linearly from the CCD without gamma compensation. Use this setting when you want to produce images for image processing or image analysis.

Knee [1/2]
The two following knee positions are available:

1	Used in normal shooting conditions.
2	Used when shooting a dark object and a highly illuminated object at the same time.

G sync [on/off]
Adds a sync signal to the G signal in the RGB output.

on	Select when using a video monitor without a sync input connector. A sync-added G signal can be output from the camera's ⊡→ RGB/SYNC connector (rear panel).
off	A sync signal is not added to the G output signal.

4. System Setup menu (page 4)

Mem.Bank [A/B]
This camera has two memory banks (A or B) for storing settings. You can record a different group of settings in each bank, and switch to the bank most suitable for the shooting conditions at hand. The selected memory bank is shown in the upper left corner of the menu.

Mem.Protect [on/off]
You can protect each memory bank by setting "Mem.Protect" to on. If the memory bank is protected, the memory bank (A or B) indicator in the upper left corner of the menu flashes. Note that the following items can be changed even when a memory bank is protected.
Page 1: "Gain", "Shutter"
Page 2: "C.Temp", "WHT.Bal"
Page 4: "Mem.Bank", "Mem.Protect", "Data Send"

Changing the Camera Settings

Data Send [A –> B/B –> A]

The camera settings can be copied between the two memory banks.

How to copy

The following is an example for copying the settings in memory bank A to memory bank B:

1. Select A –> B in the menu.
2. Press the MENU button and erase the menu.
3. Press the DATA UP button and the DATA DOWN buttons at the same time.

If you save (and protect) the master settings in memory bank A, you can use them later when resetting memory bank B.

D-sub out [VBS/YC, RGB/Comp]

This allows you to select the output signal format.

VBS	Changes the output of the ⊖→ RGB/SYNC connector and the ⎓ DC IN/🖳 REMOTE connector (when using a CMA-D2CE/D2MDCE) to VBS output.
YC	Changes the output of the ⊖→ RGB/SYNC connector and the ⎓ DC IN/🖳 REMOTE connector (when using a CMA-D2CE/D2MDCE) to YC output.
RGB	Changes the output of the ⊖→ RGB/SYNC connector and the CCU connector to RGB output.
Comp	Changes the output of the ⊖→ RGB/SYNC connector and the CCU connector to component output.

Baud Rate [9600/4800/2400/1200]

Changes the baud rate of the REMOTE connector.
Use a baud rate of 9600 when an RM-C950 is connected.

Flash [off/master/slave]

Select this mode when using a flash. If you connect to a printer or external frame memory and synchronize it with a WEN pulse, you can shoot the image at the time of the flash. The WEN pulse is output from the RGB/SYNC ⊖→ connector.

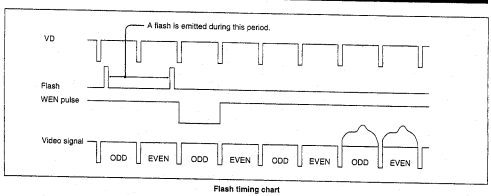
master	You can connect a flash unit to the ϟ FLASH connector. Pressing the ϟ FLASH button outputs a WEN pulse, and a flash is emitted.
slave	You can connect a slave unit to the ϟ FLASH connector. The slave unit detects the flash and a WEN pulse is output.

For connecting a flash unit or a slave unit, see "Connecting to a Flash Unit" on page 31.

Notes

- The camera enters frame accumulation mode and the color temperature is set to 5600K when in the flash mode. The electronic shutter cannot be used in accumulation mode.
- If you increase the gain on the "1. Exposure Setup" menu (page 1), the level becomes 0 dB as soon as the flash goes off.

For details, see the "Flash timing chart" on page 46.



Flash timing chart

Printer Trig. [on/off]

You can connect a printer to the camera unit and send images to the printer (memory-in) for printing.
Set Printer Trig. to on and input an external timing pulse from the RGB/SYNC ⊖→ connector to the printer. When you press the ϟ FLASH button, the image is sent to the printer memory, or the image is printed out from the printer.
Set the printer to store or print the image.

For more details, see "Connecting to a Printer" on page 28.

Note

If "Flash" is set to master or slave, you cannot use this function.

For more details, refer to the instruction manual for the printer.

Changing the Camera Settings

Initial Settings

To revert each item to its original setting, press the DATA UP and DATA DOWN buttons at the same time.

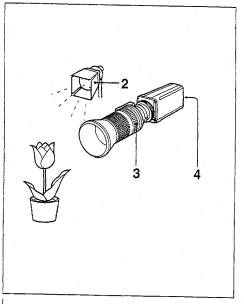
Menu Page	Item	Initial setting
1. Exposure Setup	Gain	step, 0 dB (ISO, 400)
	Shutter	off (long exp, off) (booster, off) (sync/w.en, sync) (step, FL) (c. scan,)*1
	AE window	large
	Field/Frame	field
2. Color Setup	C.Temp	3200K
	WHT.Bal	auto (R paint, off) (G paint, off) (R gain, 0) (G gain, 0)
	Linear Matrix	on
	Shading	off

Menu Page	Item	Initial setting
3. General Setup	M.Pedestal	00
	Detail	00
	H.Phase SC Phase (SC)fine	00H 00H 00H
	Gamma	on
	Knee	1
	G sync	on
4. System Setup	Mem.Bank	A
	Mem.Protect	off
	Data Send	A --> B
	D-sub out	VBS RGB
	Baud Rate	9600
	Flash	off
	Printer Trig.	off

a) If there is no external sync signal, "--" is shown.
b) DXC-950/970MD : (c.scan, 250/525)
DXC-930P : (c.scan, 310/623)

Shooting

Basic Shooting Procedure



1 Turn on the power of the camera and all connected devices.

2 Illuminate the subject with proper lighting.

3 Aim the camera and adjust the iris, focus and zoom.

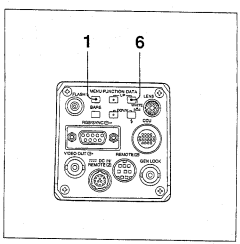
4 Adjust the white balance.
For more details, see "Adjusting the White Balance" on page 49.

5 Adjust the settings as needed.
For more details, see "Changing the Camera Settings" on page 33.

6 Start shooting.

Adjusting the White Balance

Each time the lighting conditions change, adjust the white balance so that optimal color reproduction is obtained.

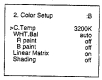


Adjusting the white balance

1 Press the MENU button for one second. (The menu is displayed.)

2 Choose "2. Color Setup" and make the following settings for color temperature and white balance. *See "Menu Operation (Changing the Settings)" on page 34.*

C.Temp: 3200K or 5600K (depending on the lighting conditions)
WHT.Bal: auto



3 Display the camera image on the screen.

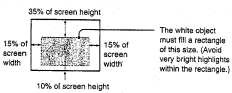
Notes

- If the color bar signal is displayed on the screen, press the BARS button to make it disappear.
- If the menu is displayed on the screen, press the MENU button to make it disappear.

4 Set the lens iris control as follows:

- Set to auto-iris control when using a lens with auto-iris capability.
- Set to an appropriate iris opening value when using a manual-iris lens.

5 Place a white object in the same light as that falling on the subject to be shot, then zoom in on the object to fill the screen as follows:



The white object can be a piece of white paper or cloth, a white wall, or the like.

Notes

- Be careful not to include highly reflective items in the picture.
- Always shoot the image under suitable lighting conditions.

6 Press the WHITE button for one second.
The message "AWB" appears on the screen while the white level is being adjusted. When the adjustment is done, the message "AWB OK" flashes on the screen. The adjusted white level is automatically stored in memory where it remains for at least 10 years, even if the camera's power is turned off.

White balance adjustment errors

If the white balance adjustment is not successful, an error message appears on the screen for about one second. If this happens, take the necessary measures and conduct steps 1 through 6 again.
For more details, see "Error messages" on page 51.

Error message

Error messages

Error message	Description and remedy
AWB NG too Dark	The video signal level is too low. Take one or more of the following measures and then press the WHITE button again. • Increase the illumination. • Widen the iris opening. • Increase the video gain.
AWB NG too Bright	The video signal level is too high. Take one or more of the following measures and then press the WHITE button again. • Remove any brightly illuminated objects. • Decrease the illumination. • Close the iris opening. • Decrease the video gain.
AWB NG C.Temp Low	The color temperature is too low. Change the C.Temp setting in the menu to 3200K and try again.
AWB NG C.Temp High	The color temperature is too high. Change the C.Temp setting in the menu to 5600K and try again.

Error message	Description and remedy
AWB NG	The camera has failed to adjust the white balance. Take one or both of the following measures and then try again. • Remove very bright highlights from the screen. • Adjust the illumination. If this message appears repeatedly, have the internal circuitry checked by qualified personnel.

Adjusting the Picture Tone in a Multi-Camera System

When configuring a multi-camera system, adjust all cameras to prevent camera-to-camera variations in picture tone. Before making the adjustments outlined below, supply the same sync signal to all cameras.
For more details, see "Connections for a Multi-Camera System" on page 24.

Connecting the cameras to video equipment with phase indication capability

When connecting to a special-effects generator, a chroma-key unit, or other video equipment with phase indication capability, the basic adjustment procedure is as follows:

1 Turn on the phase indication capability of the connected video equipment.

2 Adjust the horizontal phase using the "H.Phase" function on the "3. General Setup" menu (page 3).
For more details, see page 43.

3 Adjust the subcarrier phase using the "H.Phase" function on the "3. General Setup" menu (page 3). First set to between 0° and 180° for rough adjustment, then use "(SC)fine".
For more details, see page 43.

For more details, refer to the instruction manual of the connected video equipment with phase indication capability.

Connecting the cameras to video equipment without phase indication capability

Use one of the cameras as a reference camera and adjust the other cameras to the reference camera one by one.

1 Adjust the horizontal phase. Using the "H. Phase" function on the "3. General Setup" menu (page 3), adjust so the reference video signal and the output signal have the same horizontal sync phase. Use a waveform monitor or an oscilloscope to check the phase.

2 Adjust the SC phase. First set to between 0° and 180° for rough adjustment, then use "(SC)fine" for fine adjustment so that the reference video signal and the output video signal have the same subcarrier phase. Use a vectorscope or the wiping function of a special-effects generator so that the images of both the reference camera and the camera to be adjusted appear next to each other on the screen.

Specifications

Imaging system/optical system

DXC-950/970MD:

Pickup device	1/2-inch CCD, interline transfer type
Effective picture elements	768 (horizontal) × 494 (vertical)
Lens mount	1/2-inch bayonet type

DXC-950P:

Pickup device	1/2-inch CCD, interline transfer type
Effective picture elements	752 (horizontal) × 582 (vertical)
Lens mount	1/2-inch bayonet type

Video system

DXC-950/970MD:

Synchronization	Internal/external (VBS) synchronization, automatic switching
Signal format	NTSC standard format (EIA standard)
Horizontal scanning	525 lines, 2:1 interlace
Scanning frequency	Horizontal: 15.732 kHz Vertical: 59.94 kHz

DXC-950P:

Synchronization	Internal/external (VBS) synchronization, automatic switching
Signal format	PAL
Horizontal scanning	625 lines, 2:1 interlace
Scanning frequency	Horizontal: 15.625 kHz Vertical: 50 Hz

Inputs/outputs

Output signals	Video Composite: 1.0 Vp-p, 75 ohms RGB: 0.7 Vp-p, 75 ohm Y/R-Y/B-Y: 1.0 Vp-p/0.7 Vp-p/ 0.7 Vp-p, 75 ohms Y/C: 1.0 Vp-p, same level as VBS chroma, 75 ohms Sync: 2.0 Vp-p, 75 ohms
External sync input	VBS/BS (VBS 1.0 Vp-p or burst 0.3 Vp-p, SYNC 0.3 Vp-p)
Input/output connectors	VIDEO OUT: BNC, 75 ohms, unbalanced GEN LOCK: BNC, 75 ohms, unbalanced DC IN/REMOTE: 12-pin REMOTE: mini-DIN 8-pin FLASH: Sync socket RGB/SYNC: D-Sub 9-pin LENS: 6-pin connector for 2/3-inch lens CCU: 20-pin

Functions/performance

DXC-950/970MD:

Horizontal resolution	750 TV lines
Sensitivity	2,000 lux (F9.5, 3200K)
Signal-to-noise ratio	60 dB
Gain control	• Automatic • Manual: 0 – 18 dB in units of 1 dB
White balancing	• ISO display • Automatic • Manual: Red gain and green gain adjustable individually • ATW
Linear matrix	On/off switchable
Electronic shutter speed	Adjustable in the range of 1/10,000 to about 8.5 second: (Usable with CCD IRIS)
Gamma compensation	On/off switchable
Charge accumulation mode	Switchable between field and frame modes

DXC-950P:

Horizontal resolution	750 TV lines
Sensitivity	2,000 lux (F8.5, 3200K)
Signal-to-noise ratio	58 dB
Gain control	• Automatic • Manual: 0 – 18 dB in units of 1 dB
White balancing	• ISO display • Automatic • Manual: Red gain and green gain adjustable individually • ATW
Linear matrix	On/off switchable
Electronic shutter speed	Adjustable in the range of 1/10,000 to about 10 seconds (Usable with CCD IRIS)
Gamma compensation	On/off switchable
Charge accumulation mode	Switchable between field and frame modes

Miscellaneous

Power supply	12 V DC
Power consumption	8.2 W
Operating temperature	–5 to +45°C (23 to 113°F)
Transport/storage temperature	–20 to +60°C (–4 to +140°F)
Operating humidity	20% to 80% (no condensation allowed)
Transport/storage humidity	20% to 90% (no condensation allowed)
Dimensions (w/h/d)	70 × 72 × 123.5 mm (2 7/8 × 2 7/8 × 4 7/8 inches)
Mass	About 670 g (1 lb 8 oz)
Supplied accessories	Lens mount cap (1) Instructions for Use (1)

Design and specifications are subject to change without notice.

Recommended Equipment

Lenses

VCL-707BXM (automatic zoom, 7×)
VCL-712BXEA (automatic zoom, 12×)
VCL-716BXEA (automatic zoom, 16×)

Camera adaptor

CMA-D2/D2MD/D2CE/D2MDCE camera adaptor

Camera control unit (for DXC-950/950P)

CCU-M5/M5P camera control unit

Remote controller

RM-930 remote control unit (CCMC cable supplied)
RM-C950 remote controller (connection cable supplied)

Microscope adaptors and couplers

MVA-40 microscope adaptor (with automatic dimmer)
MVA-41A microscope adaptor
MVA-265 microscope adaptor (with automatic dimmer)
MVAC-33-O microscope coupler (for Olympus microscopes)
MVAC-33-N microscope coupler (for Nikon microscopes)
MVAC-33-SM microscope coupler (for Nikon microscopes)

Lens mount adaptor

LO-32BMT lens mount adaptor

Power supply cables

CCDC series (length: 5 m [16 ft], 10 m [32 ft], or 25 m [82 ft])
CCDCA series (length: 50 m [164 ft], or 100 m [328 ft])
CCMC series (length: 2 m [7 ft], 5 m [16 ft], 10 m [32 ft], or 25 m [82 ft])

CCU connection cables (for DXC-950/950P)

CCTZ-3RGB (for RGB output, with CCZZ-1E extension connector, length 3 m [9 ft 10 in])
CCTZ-3YC (for Y/C output, with CCZZ-1E extension connector, length 3 m [9 ft 10 in])
CCTQ-3RGB (for RGB output, with CCQQ-1 extension connector, length 3 m [9 ft 10 in])

Extension cables for CCU connection (for DXC-950/950P)

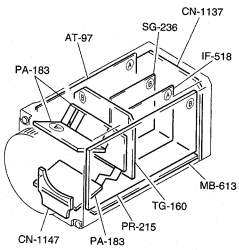
CCZA (max. length: 300 m [984 ft])
CCQ-AM (max. length 100 m [328 ft])

Camera cables

CCXC-9DB (D-sub ⟷ BNC × 5)
CCXC-9DD (D-sub ⟷ D-sub)
CCMC-9DS (D-sub ⟷ BNC × 4, S-video connector)
CCMC-9DSMN (D-sub ⟷ BNC × 3, phono jack, S-video connector)

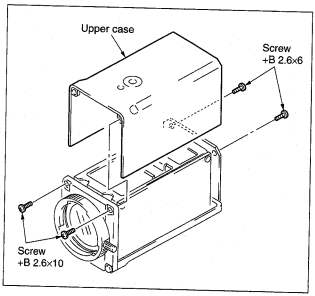
SECTION 2
SERVICE INFORMATION

2-1. BOARD LAYOUT

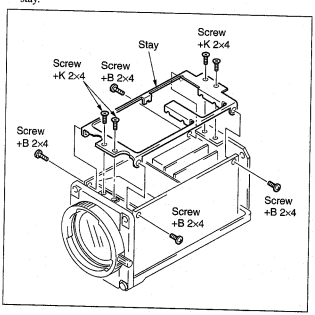


2-2. REMOVAL OF CABINET

1. Remove the four screws (+B 2.6×10, +B 2.6×6) and then remove the upper case.

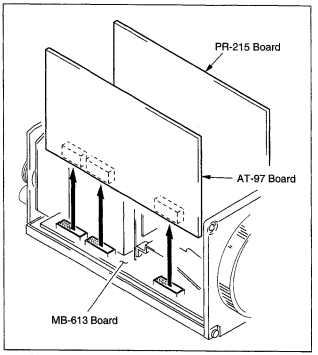


2. Remove the eight screws (+B 2×4, +K 2×4) and then remove the stay.

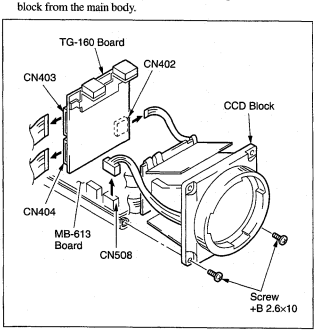


2-3. REMOVAL OF CCD BLOCK

1. Remove the upper case and stay, referring to the Section 2-2 "REMOVAL OF CABINET".
2. Pull out the AT-97 and PR-215 boards from the MB-613 board.

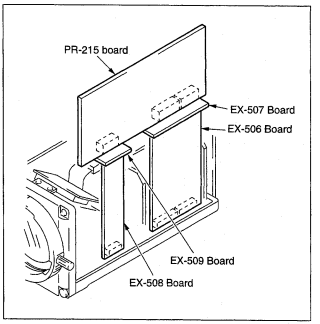


3. Disconnect the harness from the CN508 on the MB-613 board, disconnect the fiexibl board from the CN402, CN403 and CN404 on the TG-160 board.
4. Remove the two screws (+B 2.6×10) and pull out the CCD block from the main body.

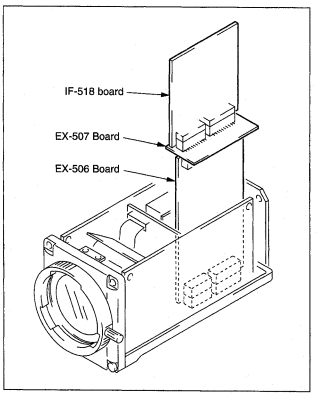


2-4. HOW TO USE AN EXTENSION BOARD

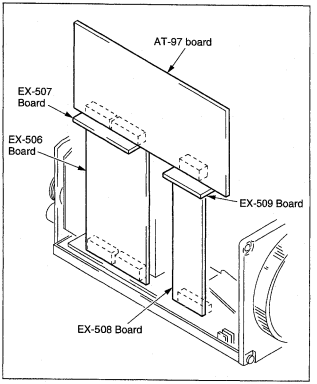
• In cases of the PR-215 board



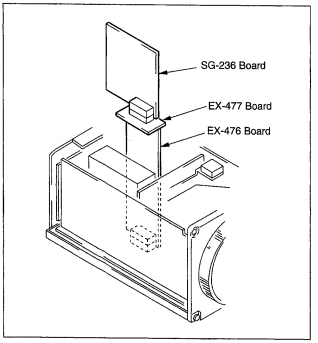
• In cases of the IF-518 board



• In cases of the AT-97 board



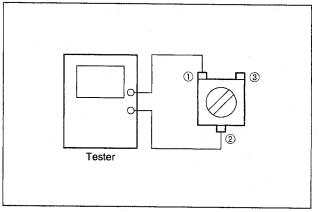
• In cases of the SG-236 board



• J-6430-600-A	Extension board	EX-506
• J-6430-610-A	Extension board	EX-507
• J-6430-620-A	Extension board	EX-508
• J-6430-630-A	Extension board	EX-509
• J-6430-640-A	Extension board	EX-476
• J-6430-650-A	Extension board	EX-477

2-5. REPLACEMENT OF SEMI-FIXED RESISTORS

In replacing RV1, 2, 3, 4, 5 and 6 of PR-215 substrate, preset their resistance values as shown below.



① to ②

RV1 : 6.1 ± 0.1 kΩ
RV2 : 3.8 ± 0.1 kΩ
RV3 : 10 ± 0.1 kΩ (fully clockwise)
RV4 : 6.5 ± 0.1 kΩ
RV5 : 10 ± 0.1 kΩ (fully clockwise)
RV6 : 3.8 ± 0.1 kΩ

SECTION 3
CIRCUIT OPERATION DESCRIPTION

3-1. PA-183 BOARD

The PA-183 board have a CCD imager and converts incident light into an electric signal. They also extract a photo-electrically converted video signal by CDS.

This section focuses CCD for NTSC.
The light separated into the three primary colors via an optical system is sent to CCD imager IC1, 5 and 9 (ICX038DLA-1 for NTSC, ICX039DLA-1 for PAL) and converted into an electric signal. Photosensors are arranged on the surface of a CCD chip. The number of photosensors in the horizontal direction is 811, and that in the vertical direction is 508. 411, 988 photosensors are arranged in total. The number of effective pixels is 768 in the horizontal direction and 494 in the vertical direction (379, 392 in total).
The incident light is converted into an electric charge corresponding to the brightness of light in a photosensor block. The converted charge is read from the photosensor block to the transfer block and sent to the output block. The transfer block is classified into a vertical transfer block and horizontal transfer block. As shown in Fig. 1, 811 vertical transfer blocks are arranged in the vertical direction of the screen, and one horizontal transfer block in the horizontal direction of the screen (the uppermost part in Fig. 1). The charges converted in photosensors are transferred to the vertical transfer blocks adjacent to each photosensor for every field in the field read mode (every for frame in the frame read mode). The charges transferred to each vertical transfer block are vertically transferred in parallel using vertical transfer clocks V1 through V4 and sent sequentially to the horizontal transfer block. The horizontal transfer block transfers the charges horizontally using horizontal transfer clocks H1 and H2 (with frequency of 910 fH) and sends them to the output block. The charges are then output from pin 10 (CCD OUT) of IC1. The horizontal and vertical transfer clocks are sent from the TG-160 board.
The charge of an output signal from IC1 is converted into a voltage using a capacitor in the output block, then output. The output signal is input through buffer Q2 (emitter follower) to pins 2 and 3 of IC4 (IC3 for the PA-134 board) (CXA-1439M). IC4 is a CDS IC. Using a sampling pulse input to pins 5 (SHD) and 6 (SHP), IC4 performs the sample and hold operation and separates a signal. It then outputs a video signal from pin 8 as a CDS OUT signal. The output signal is input through TG-160 board to the MB-613 board.

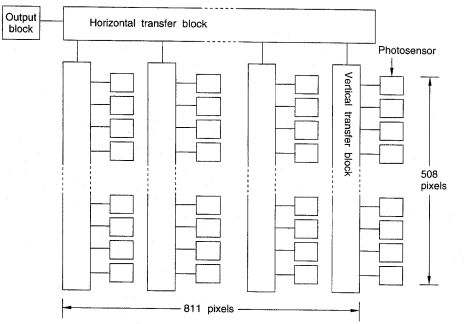


Fig. 1 Internal Structure of CCD

3-2. TG-160 BOARD

The TG-160 board consists of the circuits below.

- CCD drive timing signal generator
  ..... IC401 and IC404 (CXD1256AR)
- CCD vertical transfer clock driver
  ..... IC407, IC408 and IC409 (CXD1267AN)
- CCD horizontal transfer clock driver (for channels R and B)
  ..... IC406 (TC74AC04FS)
- 910 fH phase operation circuit
  ..... IC402 (SN74HC74APW) and
  IC403 (SN74HC00APW)
- D/A converter..... IC410 (M62352GP)

(1) CCD drive timing signal generator

IC401 and IC404 (CXD1256AR) generate a clock, sample and hold pulse, and clamp pulse required for CCD driving by inputting a 1820 fH clock and HD and VD pulses output from a sync signal generator. DXC-950/950P/970MD uses spatial offset technology for CCD adhesion. The phases of CCD driving clocks must be shifted 180 degrees between channels G, and R and B. Therefore, IC401 is used for channel G, and IC404 for channels R and B.

Each clock used in the DXC-950/950P/970MD is described below.

• CL:
910 fH clock. Driven by IC402 and IC403 so that the phase is shifted 180 degrees between channels G, and R and B.

• H1 and H2:
Horizontal transfer block driving clock of CCD imager. Channel G is driven directly, and channels R and B drive IC406 as a driver.

• XV1 to XV4:
Vertical transfer block driving clock of CCD imager. These clocks are sent through drivers IC407, IC408, and IC409 to the PA-183 board.

• XSUB:
Charge sweep pulse for electronic shutter control. This clock is sent through drivers IC407, IC408, and IC409 to the PA-183 board. The shutter speed is controlled by a microcomputer on the AT-97 board.

• RG: Reset gate pulse

• CLP1 and CLP2: Clamp pulse

• XSHP and XSHD:
Sample and hold pulse for signal separation

• WEN:
Write enable. Trigger pulse during low-speed shutter (long-time exposure).

(2) CCD vertical transfer clock driver

IC407, IC408, and IC409 (CXD1267AN) drive XV1 through XV4, XSG1, XSG2, and XSUB clocks for CCD vertical transfer block driving. The DXC-950/950P/970MD is a three-tube CCD camera, so it requires vertical transfer clock drivers for channels R, G, and B. Therefore, IC408 is used for channel G, IC407 for channel B, and IC409 for channel R.

(3) CCD horizontal transfer clock driver (For channels R and B)

IC8 (TC74AC04FS) is a CCD horizontal transfer clock driver for channels R and B.

In the DXC-950/950P/970MD a horizontal transfer clock in channel G is directly driven by TG IC because of its single channel. To drive channels R and B directly by TG IC, IC406 (TC74AC04FS) is mounted as a driver circuit because of its higher load. The H1 output signal of IC404 is thus inverted using IC406 to produce an H2 signal. Similarly, the H2 output signal of IC404 is inverted using IC406 to produce an H1 signal.

(4) 910 fH phase operation circuit

The 910 fH phase operation circuit consists of IC402 (SN74HC74APW) and IC403 (SN74HC00APW). This circuit is required to operate two TG IC circuits with phase difference of 180 degrees because the spatial offset technology described previously is used. IC403 has the corresponding function. Channel G must be delayed (180 degrees) in phase with respect to channels R and B. IC402 has the function in this case.

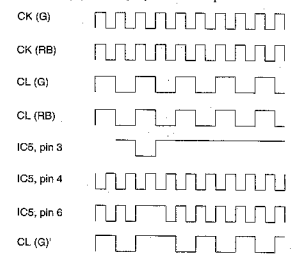
A 1820 fH (≒ 28 MHz) clock with same phase is input to pins 64 (CK) of IC401 and IC404, and a 910 fH (≒ 14 MHz) clock is output from pin 58 (CL). At that time, the CL clock in each channel is in-phase or opposite-phase. The CL clock is stabilized when it is in-phase or opposite-phase. As described previously, however, the CL clock in both channels must be opposite-phase. The CL clock must be forcibly set to the opposite phase by IC403 when it starts with in-phase during the power on sequence.

A CL (G) clock is input to pin 2 of IC403, and a CL (RB) clock is input to pin 1. The input clocks are then passed through a NAND gate. If the CL (G) and CL (RB) clocks are opposite-phase, the NAND gate output signal at pin 3 of IC403 is set high. If they are in-phase, a corresponding pulse is output. This pulse is input to pin 5 of IC403 and NANDed with the clock input to pin 4 of IC403. The output pulse at pin 6 of IC5 then becomes a dropout clock.

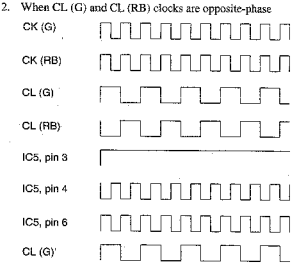
By using this pulse as a clock for channel G, the CL (G) phase is shifted 180 degrees with respect to the CL (RB) phase (opposite-phase). The output signal is set high even if the next CL (G) and CL (RB) clocks are NANDed. Therefore, dropout pulse KP is not output and stabilized in this state. The CL (G) phase must be also delayed with respect to the CL (RB) phase at all times. This operation is performed using IC402.

Timing Chart

1. When CL (G) and CL (RB) clocks are in-phase



2. When CL (G) and CL (RB) clocks are opposite-phase



(5) D/A Converter

DATA signal from AT board is converted from digital to analog. by IC410 and adjustment of voltage of Vsub of CCD, and RGL bias can be made.

As values of Vsub and RGL are different from each other, depending on the individual CCD imager, adjustment of suitable values is required.

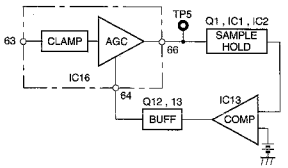
3-3. PR-215 BOARD

The PR-215 board consists of the circuits below.
- Processing circuit (IC16: µPC2372)
- Linear matrix circuit
- Color-bar generator circuit
- Chroma signal generator circuit
- Y signal and aperture signal circuits
- D/A converter

(1) Processing circuit

The video signal transmitted through the input AMP circuit of the MB-613 board is input to the process circuit.

① AGC Circuits (Fixed gain mode)



A negative video signal is input from pin 63 of IC16, clamped, then amplified in an AGC amplifier. The amplified signal (330 mV reference voltage at TP5) is input to a sample and hold circuit consisting of Q1, IC1, and IC2. The input signal processes the level of a reference pulse input during vertical blanking period as a DC value. The signal is then compared in IC13 and sent through buffers Q12 and Q13 to pin 64 of IC16. In this case, the gain (including a temperature characteristic) is made constant at all times.

In a gain of +18 dB for 0 dB, the reference pulse input from the AT board is input with the level reduced to 1/8. When the gain is set from 0 dB to +18 dB, the reference pulse decreases and the DC output increases in comparator IC13. The gain in IC16 then increases.

To track the gain in channel G, the values in channels R and B are compared with the hold value from pins 58 and 74 of IC16, with the sample and hold value of a G-channel reference pulse as reference. The comparison result is input to IC16. Limiters Q13 (pin 3) and Q12 (pin 1) determine the minimum and maximum gains.

(2) Linear matrix circuit

The linear matrix is a circuit which reproduces color nearer to visual sensation and corrects negative hue as shown in oblique lines of Figure 3.

② Linear matrix

Input and output power is shown in the following formula:

Ro = a (Ri - Gi) + b (Ri - Bi)
Go = c (Gi - Ri) + d (Bi - Bi)
Bo = e (Bi - Ri) + f (Bi - Gi)

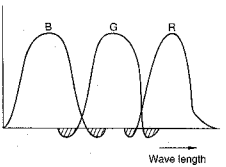
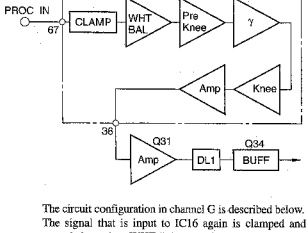


Figure 3.

The signals which have been input from R-ch and G-ch into 16 and 17 bases, respectively, are transmitted through a difference amplifier composed of 16, 17 and 18 and through buffers 18 and 19, and a (R–G) d and c (G–R) can be obtained. In the similar manner, b (R–B), e (B–R), d (G–B) and f (G–B) can be obtained.

These values are mixed with B, G and B-ch, as shown in the above formula.

③ Processing circuit



The circuit configuration in channel G is described below. The signal that is input to IC16 again is clamped and passed through a WHT BAL amplifier. The signal is then passed through a pre knee circuit, γ circuit, and knee circuit and output from pin 36. The gain in this stage is approximately three times the normal. A signal of 1 Vp-p is output when a signal of 330 mVp-p is input. This gain is determined by changing the WHT BAL amplifier using an electronic volume control. A color-bar signal that is amplified in Q31 and output through a delay line to Q34 as a G OUT signal is mixed using Q31.

(3) Color-bar generator

The color bar generating circuit is constructed to generate signals R, G, B and Y, by inputting various synchronous signals into IC15 and mixes them with the character signal at gate OR.

The level of R, G and B can be determined by varying the volumes of RV14-16. (1 Vp-p is the determined value)

(4) Chroma signal generator circuit

R, G and B OUT (TP8, 9 and 10) are transmitted through matrix resistance (R198-R230) and input into Q55 and Q62.

An R-Y (I) signal is inverted in Q55, passed through a low-pass filter consisting of R207, L11, C83, and C84, and amplified in Q57. The amplified signal is input through clamping circuit Q58 to IC20 (subcarrier modulation IC). Similarly, a B-Y (Q) signal is input from Q62, amplified in Q65, and input through clamping circuit Q66 to IC20.

A BF signal is added to each signal, and the burst phase is determined by the signal level. A chroma signal generated in IC20 is passed through bandpass filter FL1 and amplified in Q60 and Q61. The amplified signal is output to pin 17 of connector CN3 and input to the IF board.

(5) Y signal and aperture signal circuits

Y produced by resistance mix R164-166 is transmitted through the amplifier Q92-Q79 and Q80 and the buffer, and is input to Pin 42 of IC22 at Q77 and Q75. The signal level is determined by the DC control (electronic volume control) at pin 30 of IC22. A DTL signal (input to pin 40 of IC22) and aperture signal in this Y signal are mixed. A Y OUT signal is then output from pin 22 of IC22, passed through three delay lines (100 ns×3), and amplified in Q85. As a result, a signal of approximately 500 mVp-p is output from pin 21 of connector CN3 and input to the IF board. Delay lines DL6 through DL8 are used to align the phase of Y and chroma signals.

The R- and G-channel signals from Q74 and Q73 are mixed in Q72, passed through delay line DL5, and amplified in Q69. The amplified signals are input through buffer Q68 and clamping circuit Q70 to delay line DL4. The signal passed through delay line DL4 and the reflected signal are calculated to produce an aperture signal in IC22.

A DTL signal generated on the IF board is input from pin 7 of connector CN2. The input signal is sent to pin 8 of IC16, amplified in IC15, and output from pin 84 of IC16. The signal is then input through buffer Q89 to pin 40 of IC22 and mixed with a Y signal. DTL and aperture signals are mixed in Q90 to produce an RGB mix signal. The resultant signal is output to pin 23 of connector CN3.

(6) D/A converter

DATA signal from the AT board is converted from digital to analog by IC17, 18 and 19, and DC voltage for various controls, such as C16 and IC22 is emitted.

3-4. IF-518 BOARD

The IF-518 board primarily consists of the circuits below.
- Detail signal circuit
- Video signal driver circuit
- Sync control circuit

(1) Detail signal circuit

The detail signal circuit generates H and V detail signals. It determines the mix ratio so that H : V is 1 to 1 using RV208. This circuit then sends the signals to the PR-215 board.

For the H detail signal, G IE IN, G IH DELAY signal and R IE IN signals are adjusted and mixed using RV200 so that the moire in a detail signal is minimum. The resultant signal is differentiated two times using a two-stage filter to produce the H detail signal. For the V detail signal, a signal obtained when a G IE IN signal is 1H-delayed by CXL5504M is produced. The delay time of the signal is finely adjusted using a filter after it is amplified. The 1H-delayed signal is mixed with the inverted former G IE IN signal in Q258 to produce the V detail signal. The level at RV207 is adjusted and signals other than those for the detail elements are deleted.

(2) Video signal driver circuit

The detail signal returned from the PR-215 board is resistance-mixed with the R, G, and B OUT signals (1.0 V when 100%) from the PR-215 board. In channel G, the sync signal (adjusted to 300 mV (in 75-ohm termination) during output from the camera) whose level is adjusted using RV201 is mixed. The signal is then level-adjusted using RV210, RV211, and RV213 (adjusted to 1.4 V when 100%) and sent to the CN board by a driver circuit.

In Y-color difference signal, Y adjusts the level of the signal input from PR-215 at RV209, and R-Y and B-Y are produced by R, G and B matrix. The level is adjusted by RV203 and RV205. RGB and Y-color difference are exchanged by IC207.

Y and C signals are sent through the driver circuit to the CN board, respectively. The Y and C signals passed through the driver circuit are resistance-mixed to produce a VBS signal and output through the driver circuit to the CN board.

(3) Sync control circuit

The sync control circuit selects a sync signal by the SYNC CONT, X CONTI from the AT board and outputs it by a driver circuit.

3-5. AT-97 BOARD

This board, on which a microcomputer is installed, controls the entire camera, reads six switches on the rear panel and executes outside communications and commands. Furthermore, a 256 Byte EEPROM is installed, storing the set value of electronic volume and the internal parameter.

The board is composed of the following circuit blocks:
- Auto white balance
- Auto iris
- Electronic volume control
- Charactor generator
- EEPROM
- Button voltage input
- ZOOM, FOCUS control
- CCU interface
- RS-232C driver

(1) Auto White Balance Circuit

Auto white balance is kept by adjusting the levels of the R and B signals to that of G, when a white subject is taken. The signals R, G and B, output from PR-215 board are input from CN-402-18, 19 and 20 pins to the AT-97 board. After transmission through the clamping circuit, the Y signal is sampled at the peak and at IC403. After the sampled signal is converted into DC, through LPF, it is input to the difference amplifier and produces signals D-G and B-G. The signals R-G and B-G are input to the A/D converter built into the microcomputer IC422, and quantized. The micro computer calculates R and B gains from these signals to bring the error to zero, controls the related D/A converter and keeps the auto white balance.

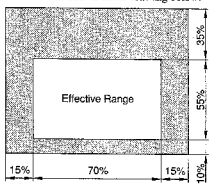
① Y Signal Level Check

The Y signal, input to the CN402-16 pin after being clamped enters the IC408-1 pin through buffer Q414.. Then, the upper third of the screen is masked by an AWB window pulse which the microcomputer has sent. After transmition through buffers Q417 and 418, the signal peak is detected by D410. The AWB window pulse is generated once in four fields by a counter built into the microcomputer set synchronously with HD and VD, counting the clock of 20 MHz. The microcomputer monitors detection output and permits the auto white balance operation only when the output is within the operation range as written in EEPROM. The operation range covers 40 IRE-100 IRE and in case the output is outside the range, "AWB NG, too bright" or "AWB NG, too dark" is indicated.

The operation of ATW also is generally similar, but the range of operation as written in EEPROM is set little wider.

② Generation of AWB Sampling Pulse

Parts of Y signals which are masked by the AWB window pulse are peak held by Q421 and D404 for their high intensity parts, and shaped for waveform by Q422. Then, they are ANDed with AWB window pulse by IC410, and sent to IC403 as AWB sampling pulses. AWB window pulse takes out the lower middle part of the screen as shown in the drawing below:



③ Auto White Balance Operation

According to the above-mentioned process, three types of signals, R–G, B–G and G–G, are input in the microcomputer IC422-30 pin divided by time. G–G corrects difference amplifier errors and controls EVR of R-gain and B-gain of the PR-215 board, to meet the following formula:

(G–G) - (R–G) = dR = 0
(G–G) - (B–G) = dB = 0

When dR and dB become (–1, 0 and 1) respectively, white balance is judged in convergence. But actually, convergence is judged three times. The average value is set to EVR as the final datum. The IC18 3 pin of board PR-215 is the EVR of R-gain and the IC18 4 pin is the EVR of B-gain. When white balance is converged normally, "AWB OK" is indicated.

A counter is built into the microcomputer to count the number of convergence trials. If there are less than three trials with a prescribed time, "AWB NG" is indicated. Furthermore, if R and B-gain exceeds a certain value and there is no convergence, "AWB NG, C. temp High" or "AWB NG, C. temp Low" is indicated.

The process is the same for ATW in principle, but the microcomputer contains a table which shows the values of R-gain and B-gain when a black radiant light source is traced. It is used only when the values of R-gain and B-gain calculated from dR and dB are within the values of the table.

(2) Auto Exposure

This equipment has AGC, lens-iris, CCD-iris and three series of AE. Coordinated operation permits a wide range of dimming.

The Y signal input to the CN402-16 pin is clamped at Q429 then input to the IC408-3 pin through buffer Q414. The unnecessary border of the screen is masked by the exp. window pulse output by microcomputer. The Y-signal is then input to detection circuits IC415 (peak) and IC435 (average) through buffer Q428 and clamping circuits Q430 and 431. The detection output, after the peak or average detection has been selected, is input to the IC422-32 pin of the microcomputer, and is quantized by the built-in A/D. The microcomputer acknowledges the exposure condition (under/over) and the preset mode (AGC on/off, lens-iris on/off and CCD-iris on/off) and controls AGC, lens-iris and CCD-iris accordingly.

① AGC Operation

The detection output sent to the microcomputer is compared with the standard value written in EEPROM and the control voltage is calculated to comply with the value of the error. The control voltage is output from the D/A converter IC431-12 pin, switched at IC432 and transmitted to PR-215 board through buffer Q427 as a reference pulse. AGC amplifier gain is determined by PR-215 board to make the wave crest value of the reference pulse correspond to the standard one. The dimming range is 0-18 dB.

In case of STEP, ISO mode, set dB value or ISO No.is converted from the table value built into the microcomputer to the voltage value, and the gain of the AGC amplifier of the PR-215 board is controlled by the reference pulse.

② Lens-iris Operation

The control voltage is calculated in the same manner as AGC. It is output from the D/A converter IC427-2 pin, transmitted through IC437 (iris control and change-over of inside and outside), and converted from 0-5 V to 0-8 V, at IC435. After conversion, it is sent from CN401-8 pin, through board MB-613, and supplied from the hot shoe of the lens mount or the 6p connector of the rear panel to the lens.

When RM-930 is connected and the lens-iris is set to manual, the IC437-5p voltage becomes L, and lens-iris voltage is controlled by RM-930 input to the CN401-10 pin.

③ CCD-iris Operation

CCD-iris is controlled by a command transmitted from the microcomputer, to IC401 and 404 of the TG-160 board, through the internal serial bus. Dimming range covers Normal-1/4000 sec. In the same procedure as AGC, the command transmitted to board TG is calculated to correct the value of the error.

As the transmitted command is different between NTSC and PAL, it is transmitted after NT/PAL mode, set in EEPROM, has been read and the calculated command has been corrected.

In Step and Clear-Scan modes, the command is transmitted after the shutter speed set by the user has been read from EEPROM and converted into a TG-160 board command in the microcomputer.

④ Coordination of AGC, Lens-iris and CCD-iris

AE of this equipment gives the top priority to the lens-iris. The microcomputer recognizes the present lens iris diaphragm at all times. If an error in the exposure is generated, it first tries to restore the correct exposure by lens-iris operation.

If the lens iris diaphragm is at maximum or minimum opening and exposure can not be corrected further, AGC or CCD-iris is operated.

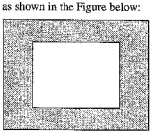
⑤ Photometric Range on the Screen

The photometric range on the screen is determined by the exp. window pulse from the microcomputer. Large, Medium and Spot can be chosen.

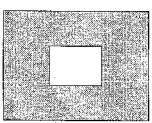
An exp. window pulse is generated once in four fields, by a counter built into the microcomputer set synchronously with HD and VD, counting the clock of 20 MHz.

In order to equalize the work volume of the microcomputer, the exp. window pulse is output in the order of (Exp) - (nop) - (AWB) - (nop) - (Exp), with an inter-mediate pause and a shifted phase.

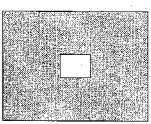
The photometric ranges for Large, Medium and Spot are as shown in the Figure below:



Large
Approximately 60%
of the screen.



Medium
Approximately 25%
of the screen.



Spot
Approximately 6%
of the screen.

(3) Internal Serial Bus and Electronic Volume Control

Internal serial buses in D/A converter IC, EEPROM, character generator IC and timing generator IC are connected with the microcomputer. The data and clock output by the microcomputer are transmitted to each IC, using a common serial bus.

The IC selected for data transmission is determined by a chip select signal output from IC428. But, in the case of EEPROM only, it is directly output from the 75 pin of the microcomputer IC422. EEPROM has an exclusive wire to return the address data designated by the microcomputer, and these data are input to the IC422 79 pin of the microcomputer.

This equipment has six internal 12 ch D/A converter ICs. The microcomputer controls the electronic volume of 12×6= 72 ch through the serial bus. The microcomputer initializes the electronic volume when power for the camera is turned on. Almost all the initialized data are stored in EEPROM, but the data which the microcomputer has calculated for the electronic volume related to AE and AWB in accordance with the situation at that moment are set. Once the data are set, the D/A Converter IC holds the set output voltage, until new data are transmitted from the microcomputer.

(4) Character Generator

Character strings can be superimposed at a chosen place on the screen by a control command and ASCII code character strings sent to the character generator IC430 through the serial bus. IC430 Produces an approximately 7MHz clock for itself and operates in synch with outside HD and VD. The character generator sends a signal for character strings designated by the microcomputer from the 13 pin, and a KEY signal for masking the background of the characters in high-light, from the 17 pin. Each individual signal is introduced into the PR-215 board, from CN403-11, and accumulates on R, G and B process outputs. On the screen, they are displayed as white characters with a black frame. By setting the microcomputer, the characters can flash at one-second intervals.

(5) Read/write of EEPROM

A nonvolatile memory IC429 with a 256 Byte (128 words×16 bits) capacity is installed. This memory permits random access read/write of data in 2 byte units, by command from the microcomputer through the internal serial bus.

The data bus width of the microcomputer is only 8 bits. When data are read, only 8 bits of the required side out of 16 bits (2 bytes) are used. However, when data are written, the words (16 bits) including the data which require rewriting first are read, and only the 8 bits which have been rewritten are changed into new data, requiring troublesome procedure. It takes approximately 10 ms to write.

(6) Control Acknowledgement Button

When the user presses any of six buttons on the rear panel of the camera, the direct current voltage corresponding to the pressed button is input to the microcomputer IC422-31 pin from the CN403-19 pin. The microcomputer quantizes the voltage with the built-in D/A converter and acknowledges the pressed button. It also acknowledges the operation to be performed, from whether the menu is displayed or not, and where the menu cursor is positioned, and starts the corresponding control software.

(7) Zoom and Focus Control

When a lens with electronically operated zoom and focus controls is installed, remote controlled zoom and focus operation is available, by using commands transmitted by RM-C950 and CCU-M5, or direct current control voltage from RM-930. Commands from RM-C950 and CCU-M5 are interpreted by the microcomputer and is output from the IC427 6 pin (for zoom) and the 7 pin (for focus) as direct current voltage, to IC424 through SW402. On the other hand, the control voltage from RM-930 is input to IC424 from the CN403-20 pin (for focus) and 21 pin (for zoom), through SW402. At IC424, RM-C950, CCU-M5 or RM-930 is selected and output to the lens from the CN401-2 pin (for zoom) and 4 pin (for focus) through buffer IC425.

The signal which selects the control voltage at IC424 is output from the IC422-76 pin to the IC424-9 and 10 pins. This signal is usually L, and the IC424 selects the voltage from RM-930, but when the microcomputer acknowledges commands from RM-C950 and CCU-M5, the signal is H and the voltage changed to a control voltage of RM-C950 and CCU-M5.

Furthermore, SW402 usually is set on the FZ side, but when it is changed to the PT side, the voltage of IC427-8 and 9 of D/A converter is output. This is to control PAN and TILT of the camera.

(8) CCU Interface Circuit

Commands between the CCU and the microcomputer are exchanged through the CN403-22 pin.

A command from the CCU is input to the IC422-20 pin of the microcomputer from the CN403-22 pin through buffer Q416 (2/2). The microcomputer converts the received command into a parallel signal, interpret it, and tells the CCU that MSB is zero for confirmation. The command from the microcomputer is input from the IC422-21 pin to the CN403-22 pin through the buffer Q416 (1/2).

The CCU receives the command from the microcomputer, and after identifying it, transmits "C080h". After receiving this command, the microcomputer interprets the next command transmitted by CCU, and executes it.

As a CCU command is lower in priority than an RS-232C command, commands from CCU are ignored when the camera is controlled by RS-232C by using the personal computer or RM-C950.

(9) RS-232C Interface Circuit

The microcomputer has a start-stop synchronizing serial interface. Because input and output signals are of TTL level, the logic is inverted by RS-232C driver IC421, the signal level is converted into +/–10v, and then, outside communication is started. The IC421 has a DC-DC converter which starts only by a supply of +5V.

The signal transmitted from outside by RS-232C is input to the IC421-13 pin from the CN403-23 pin and it is input to the microcomputer IC422-10 pin from the IC421-12 pin after logical inversion and level shift.

The output signal from the microcomputer is input to the IC421-11 pin from the IC422-11 pin. The signal is output outside from the IC421-14 pin through the CN403-24 pin after logical inversion and level shift.

The "Remote terminal" on the rear panel of the camera is the interface for RS-232C. When RM-C950 is used, power voltage (+UNREG) is supplied from the 7 pin of this terminal. When the level of the IC422-39 pin of the microcomputer is set to H, the control signal is output from the CN402-2 pin and power is supplied to RM-C950.

3-6. SG-236 BOARD

This board emits various synchronous signals. This board automatically sets the external sync mode when a genlock (VBS) signal is input from the outside, then outputs a sync signal synchronized with the genlock signal.

• Internal sync

For the NTSC system, the DC clock controlled by RV1 is sent through IC6 (CXD1216M) to buffer Q5 to control VCO CP1 and set a clock frequency. The 28 MHz clock is sent to the TG-160 board, frequency-divided by one half, then sent back. The clock is then input to pin 26 of IC10 (CXD1217M). Various pulses are then output with this clock as reference.

For the PAL system, the DC clock controlled by RV1 controls CP2. A 4 fsc signal is input to pin 10 of IC10. This signal is sent to phase comparator IC10 and output from pin 24 (H COM OUT). The output signal is then sent through IC6 to a low-pass filter (consisting of R37, R41, C22, and C24) and buffer Q5 to control VCO CP1.

• External sync (VBS genlock)

An EXT VBS signal is input from pins 4 and 2 of connector CN1. The EXT VBS signal is inprt from pin 4 of CN1 when it is input the camera. The EXT VBS signal is input from pin 2 of CN1 when it is input to the camera control unit (CCU or CMA-D2). The camera side has priority in this case. The VBS signal input to pin 4 of connector CN1 is input to pin 5 of IC1 (1/2) and amplified in IC1 (1/2). After that, the lower edge of a sync signal in the VBS signal is clamped to ground using C4 and D3. When the VBS signal is input to hold the DC component at the upper edge of a sync signal using C9, pin 11 of IC2 (2/3) is set low. The VBS signal is then supplied to the sync separation circuit.

The VBS signal input to pin 2 of connector CN1 is terminated in R4 and sent to pin 1 of IC2 (1/3). Pin 10 of IC2 (1/3) is set high when the extension distance of the camera and CCU is 200 m or 300 m. A cable compensation circuit consisting of C12, R14, C11, R13, C10, and R12 is then activated.

Q2 and Q1 is a floating amplifier that cancels the hum occurring during cable extension. The VBS signal is then sent through buffer Q3 to the sync separation circuit. The burst component in the VBS signal is passed through bandpass filter consisting of L3 and C15, amplified in Q4, and converted into an amplitude of 0 to 5 V using comparator IC5. R25 slightly contains hysteresis to prevent noise. The burst component output from pin 6 of IC5 is input to pin 4 of IC6. The burst component is compared with an internal subcarrier in IC6. The comparison output is sent to pin 1 of IC6 to pin 2 of IC7, where the VD period is extracted (because the V BLKG period of the burst component is lost, nothing to be compared exists, and an error occurs in the output of the comparator). The resultant signal is passed through a low-pass filter consisting of R35, R36, C20, and C21, amplified in operational amplifier IC8 (1/2), then input to the control voltage input pin of CP2 (4 fsc VCO), where an oscillated 4 fsc signal is input to sync signal generator IC10. As a result, an internal subcarrier is locked to the external subcarrier (burst). SC produced at IC10 is phase shifted by SC phase shifter of IC12 and 13, and then transmitted to the encoder. The subcarrier from IC10 is input to pin 9 of IC13 (2/2) and output from pin 12 with the pulse width changed.

This pulse width can be changed by the external DC control. In this case, a feedback is established by IC12 to compensate for the temperature characteristic. The output signal is input to pin 2 of IC13, then output with the duty cycle set to 50 %. The 0/π selection can be performed by selecting output signals using analog switch IC3 (1/3). The subcarrier phase can be continuously changed by changing the pulse width above. The phase of the encoder output subcarrier then coincides with that of the external subcarrier.

The sync signal in the VBS signal is amplified in Q10 through Q12 and sent through a low-pass filter consisting of R94 and C63 to sync separation circuit IC4. The sync signal is then input to pin 17 of IC6. The FH pulse output from pin 27 of IC10 is input to monostable multivibrator IC11 (1/2) The pulse width can be then changed by the external DC control. In this case, a feedback is established by IC8 (2/2) to compensate for the temperature characteristic. The pulse is then input to pin 15 of IC6 and compared with the external sync signal above. An output signal at pin 9 is passed through a low-pass filter consisting of R37, R41, C22, and C24 to control CP1 (VCO). As a result, the phases of an internal H pulse and external sync signal are kept constant. These phases can coincide with each other by controlling the pulse width of H phase shifter IC11 (1/2).

• Generation of CLP5

A CLP5 pulse is used to clamp the AGC circuit on the PR-215 board. It has the phase relation shown in Fig. 1.

An HD pulse at pin 8 of IC10 is integrated in R84 and C56, then input to IC14. The input pulse is inverted in IC14 and integrated in R85 and C57. The pulse width is controlled by monostable multivibrator IC11 (2/2). The resultant pulse is output from pin 6.

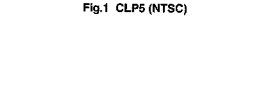


Fig.1 CLP5 (NTSC)

3-7. MB-613 BOARD

This board is composed of a DC/DC converter which supplies DC power required mainly by each block, an input amplifier circuit for video signal and a circuit which produces seven types of SG board pulses and transmits them to the PR-215 board. C501, R501-504 are noise removal filters, used when the lens is operated by RM-930/RM-C950.

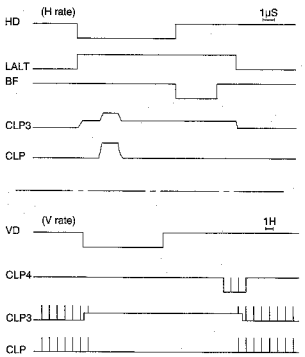
Input amplifier

Since the circuit configuration in R, G, and B channels is almost the same, only the G channel is described below.

Trap filter FL502 eliminates a 14 MHz video signal coroponent from CHB (CAMERA HEAD BLOCK). The 300 mV voltage at TP501 is used as an input reference voltage.
An inverting amplifier consists of Q510, Q517, Q512, and Q513. The reference pulse from the AT board is mixed using Q513.

Channels R and B select the gain during color temperature conversion by turning on or off Q504 and Q518. In the C TEMP mode of the camera, Q504 is turned on and Q518 is turned off when the color temperature is 3200 K. Q504 is turned off and Q518 is turned on when it is 5600 K. Q507, 514 and Q521 clip it at 1 Vp-p when a high-luminance signal is input. The luminance level can be adjusted using an electronic volume control.

Timing Chart (NTSC)



3-8. CN-1147 BOARD

This board is composed of:
- input and output connectors
- control voltage circuit
- CMA/RM detection and change-over circuits
- remote control power supply circuits
- crash circuit

(1) Input and Output Connectors

12 pin connector : connected to CMA-D2/D2MD or RM-930.

20 pin connector : connected to CCU-M5.
When SENSE (+), (–) is connected to CCU, a reference voltage is output to maintain power at a DXC-950 constant (normal voltage is approximately DC 2.5v).

9 pin D-sub : RGB, Component, VBS, Y/C is selected on the menu screen and output.

8 pin connector : can be connected to RM-C950 or computer.

6 pin connector : for Ieus.

(2) Control Voltage Circuit

When SW601-606 are pressed, resistance is divided, so DC voltage can be transmitted to the microcomputer. When connected to RM-930, priority is given to DC control from RM, by changing-over at IC601 (1/3).

(3) CMA/RM Detection and Change-over Circuit

This circuit changes over after detecting which one is connected, (A): when connected to CMA-D2/D2MD, so that input and output terminals on the CMA rear panel can be used, (B): when connected to RM-930, for manual control.
When 6 pins of the CN605 12 pin connector is connected to CMA-D2, the circuit is opened, and when connected with RM-930, it becomes 0-5v. This information is sent to the 1 pin of the IC604 comparator, compared with the 3 pin of the standard voltage and changed to IC602 and 603 analog switch. When power is input, initializing reset is performed by the reset circuit of R645, 646, C622 and Q603.

(4) Remote Control Power Supply Circuit

This is a circuit which supplies power, when RM-C950 is connected with 8 pin connector.
Detected data are transmitted from the AT-97 board of the microcomputer, to the CN601 (8 pin connector), through the CN606 3 pin. When it is released from the remote control and detected by the microcomputer, the CN606 12 pin becomes HIGH and Q1 is ON. Thus, UNREG is supplied to RM-C950, through Q1.

(5) Flash Circuit

In master mode, a positive pulse is input to CN606 from the 15 pin, which permits ON of D603 to introduce Flash.
In slave mode, the 1 pin is changed to GND by the IC601 analog switch to induce D604 to operational status. (in master mode, D604 is OFF at –5 V). When D604 cathode is biased as –5 V by R638, the slave unit is detected, and when the D604 anode and GND short circuits, a pulse is transmitted to the AT-97 board, from the CN606 13 pin, through C620.

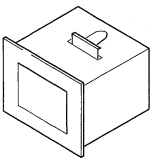
SECTION 4
ALIGNMENT

4-1. PREPARATION

4-1-1. Fixtures and Equipments Required

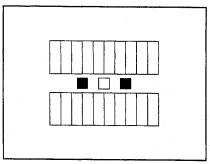
J-6029-140-B	Pattern Box PTB-500

• Light source for test charts AC 90～240 V

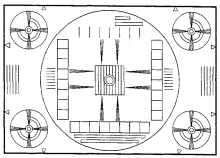


A-6026-130-B	Grayscale Chart

• For video level adjustment, etc.



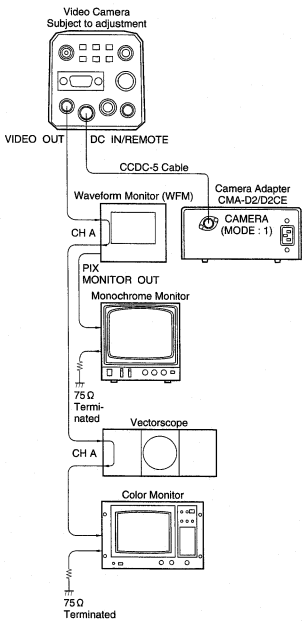
J-6026-100-A	Resolution Chart



- J-6430-600-A Extension board, EX-506
- J-6430-610-A Extension board, EX-507
- J-6430-620-A Extension board, EX-508
- J-6430-630-A Extension board, EX-509

Commercial equipment and fixture
- Dual Trace Oscilloscope
- Vectorscope
- Waveform Monitor
- Frequency Counter
- Digital Voltmeter
- B/W Monitor
- Color Monitor
- Bayonet type lens with auto iris function
  - 1/2-inch lens (VCL-712 BXEA or equivalent)
  - 2/3-inch lens + LO-32BMT lens mount adaptor

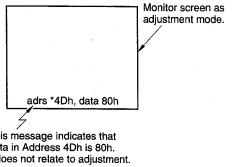
4-1-2. Connection



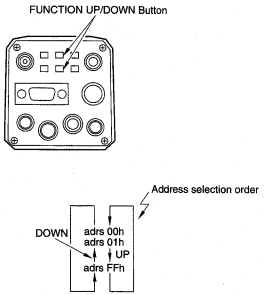
4-1-3. How to adjust an electronic control

In addition to the controls mounted on boards, this system has electronic controls (EVR) as the adjustment device. Adjustment procedure for these electronic controls is described below.

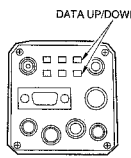
1. Electronic control (EVR) adjustment mode
   Set the SW401/AT-97 board to ADJ position, and the adjustment mode for an electronic control is put. The address and the data of an electronic control are displayed on the monitor screen.

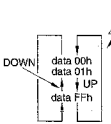


2. Address selection of Electronic controls, EVR
   The address that is displayed on the monitor will go up (or down) by pressing the FUNCTION UP (or DOWN) button on the rear panel. When pressing the FUNCTION UP (or DOWN) button continuously, displayed address will change in succession.



3. Data selection of electronic controls (EVR) (EVR adjustment)
   The data (adjustment value) that is displayed on the monitor will go up (or down) by pressing the DATA UP (or DOWN) button on the rear panel. By this operation, the adjustment value will change in the same manner that when an ordinary level control is turned.



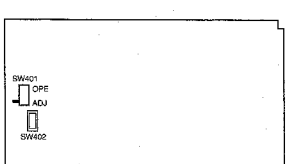


4-1-4. Switch Setting Before Adjustment

Menu setting :
Keep pressing on the MENU button for about one second to indicate the menu, then press the DATA UP button and the DATA DOWN button at the same time. Each item will become the initial setting.

AT-97 board :
SW401 (ADJ/OPE): ADJ

Note : After the adjustment, set the SW1 (ADJ/OPE) /AT-97 board to OPE position.

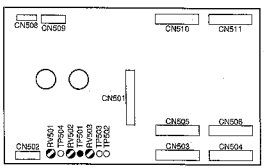


AT-97 BOARD (B SIDE)

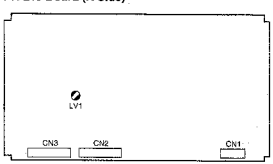
4-2. ADJUSTMENT

Adjustment point

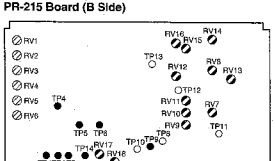
MB-613 Board (A Side)



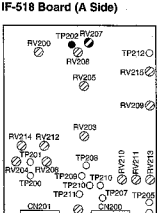
PR-215 Board (A Side)



PR-215 Board (B Side)



IF-518 Board (A Side)



4-2-1. Color Bar Adjustment (1)

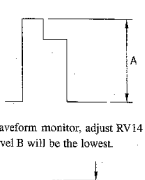
Camera mode : BARS
Equipment : Waveform monitor
Adjustment point : RV7 and RV12 on the PR-215 board
Procedure :

1. Use extension boards, EX-506/507 and EX-508/509 to extend the PR-215 board.
2. Use the FUNCTION button to show adrs 62h.
3. For NTSC, confirm that the data is 00h. For PAL, use the DATA button to show data A5h.
4. Adjust RV7 and RV12 so that the carrier level A will be the lowest.

4-2-2. Color Bar Adjustment (2)

Camera mode : BARS
Equipment : Oscilloscope and waveform monitor
Measuring point : TP9/PR-215 board
Adjustment point : RV15, RV14 and RV16 on the PR-215 board
Procedure :

1. Adjust RV15 so that the TP9 waveform on the oscilloscope will be A=1.0±0.01 V.

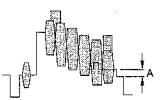


2. Using the waveform monitor, adjust RV14 and RV16 so that the carrier level B will be the lowest.

4-2-3. Color Bar Adjustment (3)

Camera mode : BARS
Equipment : Waveform monitor
Adjustment point : EVR adrs 32h
Adjustment spec. : A=0 (DXC-950P)
A=7.5 IRE (DXC-950/970MD)
Procedure :

1. Using the UP/DOWN button of DATA, make adjustment so that the setup level A will be the spec. value.

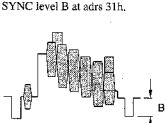


4-2-4. Color Bar Adjustment (4)

Camera mode : BARS
Equipment : Waveform monitor
Adjustment point : EVR adrs 30h and EVR adrs 31h
Adjustment spec. : A=100±1 IRE (for NTSC)
A=700±10 mV (for PAL)
B=40±2 IRE (for NTSC)
B=300±10 mV (for PAL)
Procedure :

1. Adjust the Y level A at adrs 30h.

2. Adjust the SYNC level B at adrs 31h.

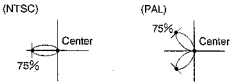


4-2-5. Color Bar Adjustment (5)

Equipment : Vectorscope
Adjustment point : RV8, RV10, RV11, LV1 and RV9 on the PR-215 board.

Procedure :

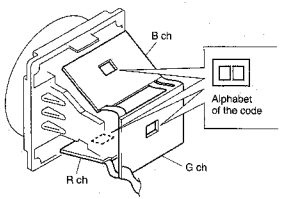
1. Adjust RV8, RV10, RV11 and LV11 so that each luminescent spot will be positioned at the center within the frame.
   RV8 ↕ , RV10 ↖↗ , RV11 ↔ , LV1 ↙↗
2. Use RV9, make adjustment so that the burst level will be 75%.



4-2-6. VSUB Voltage Adjustment

Adjustment spot : (Bch) EVR adrs 11h
(Gch) EVR adrs 12h
(Rch) EVR adrs 13h

Adjustment procedure : Make settings to the data values corresponding to the alphabet of the code shown on the back side of each CCD element



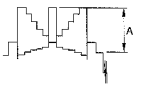
Code	E	f	G	h	J	k	L	m
Data	70h	76h	7Ch	82h	88h	8Eh	94h	9Ah
Code	N	P	Q	R	S	T	U	V
Data	A0h	A6h	ACh	B2h	B8h	BEh	C4h	CAh
Code	W	X	Y	Z				
Data	D0h	D6	DCh	E2h				

4-2-7. Standard Input Level Adjustment

Object : Gray scale
Equipment : Oscilloscope
Measurement point : TP501/MB613 board
Adjustment point : lens iris
Spec. : A=300±10 mV

4-2-8. RGB Preamplifier Gain Adjustment

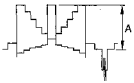
Object : Gray scale
Equipment : Oscilloscope
Measurement point : (Gch) TP5/PR-215 board
(Rch) TP4/PR-215 board
(Bch) TP6/PR-215 board
Adjustment point : (Gch) RV502/MB-613 board
(Rch) RV501/MB-613 board
(Bch) RV503/MB-613 board
Spec. : A=300±10 mV



4-2-9. Gain 0 dB Adjustment

Object : Gray scale chart
Equipment : Oscilloscope
Procedure :

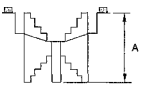
1. Use the FUNCTION button to show adrs 36h.
   Use the DATA button to adjust the voltage to the level immediately before the white part A at the center rises



2. Turn off the power supply to the camera, then remove the PR-215 board from the extension board and insert it directly into the MB-613 board.

4-2-10. AGC Input Adjustment (3200K)

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : (Gch) TP2/PR-215 board
(Bch) TP3/PR-215 board
(Rch) TP1/PR-215 board
Adjustment point : (Gch) EVR adrs 9Ch
(Bch) EVR adrs 9Eh
(Rch) EVR adrs 9Ah
Spec. : A=1.0±0.04 V

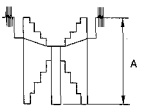


Procedure :

1. Turn on the power supply to the camera, and open the lens iris.

4-2-11. AGC input Adjustment (5600K)

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : (Rch) TP1/PR-215 board
(Gch) TP2/PR-215 board
(Bch) TP3/PR-215 board
Adjustment point : (Rch) EVR adrs 9Bh
(Gch) EVR adrs 9Dh
(Bch) EVR adrs 9Fh
Spec. : A=1.0±0.04 V



Procedure :

1. Call the menu by pressing the MENU button, set C. Temp to 5600K, and set it again to 3200K after making the adjustment.

4-2-12. MIN GAIN Adjustment

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : TP5 on the PR-215 board
Procedure :

1. Use the lens iris to make adjustment to A=330±10 mV.

2. Use the FUNCTION button to show adrs 35h.
   Use the DATA button to adjust the voltage to the level immediately before the white part A at the center falls.

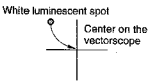
4-2-13. Gch PR OUT Adjustment

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : TP9 on the PR-215 board
Adjustment point : EVR adrs 25h
Spec. : A=1000±10 mV

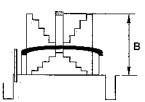
4-2-14. Rch and Bch PR OUT Adjustment

Object : Gray scale chart
Equipment : Vectorscope and waveform monitor
Procedure :

1. Use FUNCTION button to show adrs 26h, and use the DATA button to make adjustment so that the white luminescent spot will be positioned at the center on the vectorscope.



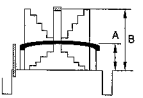
2. Use FUNCTION button to show adrs 27h, and use the DATA button to make adjustment so that the white luminescent spot will be positioned at the center on the vector scope.
3. Repeat the steps 1 and 2 for two to three times.
4. Use FUNCTION button to show adrs 26h, and use the waveform monitor to confirm the following has been achieved:
   B=100±2 IRE (NTSC)
   B=700±20 mV (PAL)



5. Use the FUNCTION button to show adrs 27h.

4-2-15. Gamma Adjustment

Object : Gray scale chart
Equipment : Waveform monitor
Adjustment point : EVR adrs 1Bh
Spec. : A=56±2 IRE (NTSC)
A=365±14 mV (PAL)
B=100±2 IRE (NTSC)
B=700±20 mV (PAL)



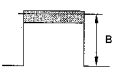
4-2-16. Shading Correction Adjustment

Object : All white pattern
Equipment : Oscilloscope and waveform monitor
Measuring point : TP14 on the PR-215 board
Adjustment point : RV18 and RV17 on the PR-215 board

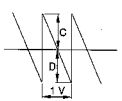
Procedure :

1. Press the MENU button to show the second page of the menu, then set the shading to 99.
2. Close the lens iris and adjust RV18 so that the waveform of TP14 will become flat.

3. Use the waveform monitor to make adjustment on the lens iris to achieve:
   B=100±2 IRE (NTSC)
   B=700±20 mV (PAL)



4. Adjust RV17 so that the waveform of TP14 will be C=D.

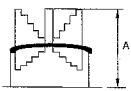


5. Put off the data 99 of the shading, and press the MENU button to erase the menu.

4-2-17. Gch PRE KNEE Adjustment

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : TP9 on the PR-215 board
Procedure :

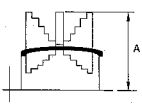
1. Use the FUNCTION button to show adrs 88h, and use the lens iris to adjust the waveform monitor level to 100%.
2. Press the DATA DOWN button one step after another until the level A lowers, then press the DATA UP button by three steps.



4-2-18. KNEE Adjustment (1)

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : TP9 on the PR-215 board
Procedure :

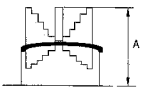
1. Use the FUNCTION button to show adrs 90h.
2. Press the DATA DOWN button one step after another until the level A lowers, then press the DATA UP button by five steps.



4-2-19. Gch PRE KNEE adjustment (2)

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : TP9 on the PR-215 board
Adjustment point :
Procedure :

1. Use the FUNCTION button to show adrs 8Ah, and use the lens iris to make adjustment of A=1.0±0.01 V.

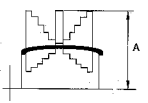


2. Press the DATA DOWN button one step after another until the level A lowers, then give further one step.

4-2-20. KNEE Adjustment (2)

Object : Gray scale chart
Equipment : Oscilloscope
Measurement point : TP9 on the PR-215 board
Procedure :

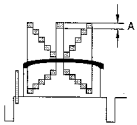
1. Use the FUNCTION button to show adrs 92h.
2. Press the DATA DOWN button one step after another until the level A lowers, then press the DATA UP button by three steps.



4-2-21. Rch and Bch PRE KNEE Adjustment (1)

Object : Gray scale chart
Equipment : Waveform monitor
Procedure :

1. Use the FUNCTION button to show adrs 84h, and use the lens iris to achieve F2.8.
2. Use the DATA button to make adjustment so that the level of A will be the lowest.

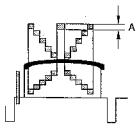


3. Use the FUNCTION button to show adrs 8Ch.
4. Use the DATA button to make adjustment so that the level of A will be the lowest.
5. Use the FUNCTION button to show adrs 84h, then repeat the steps of 2 to 4.
6. Use the FUNCTION button to show adrs 8Ch.

4-2-22. Rch and Bch PRE KNEE Adjustment (2)

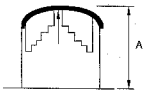
Object : Gray scale chart
Equipment : Waveform monitor
Procedure :

1. Use the FUNCTION button to show adrs 86h.
2. Use the DATA button to make adjustment so that the level of A will be the lowest.
3. Use the FUNCTION button to show adrs 8Eh.
4. Use the DATA button to make adjustment so that the level of A will be the lowest.
5. Use the FUNCTION button to show adrs 86h, then repeat the steps of 2 to 4.
6. Use the FUNCTION button to show adrs 8Eh.



4-2-23. White Clip Adjustment (K2)

Object : Gray scale chart
Equipment : Oscilloscope
Measuring point : TP9 on the PR215 board
Adjustment point : EVR adrs 96h
Spec. : A=1200±10 mV

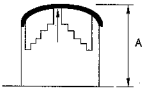


Procedure :

1. make adjustment with the lens iris kept open.

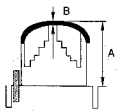
4-2-24. White Clip Adjustment (K1)

Object : Gray scale chart
Equipment : Oscilloscope
Measuring point : TP9 on the PR215 board
Adjustment point : EVR adrs 94h
Spec. : A=1220±10 mV



4-2-25 White Clip Adjustment

Object : Gray scale chart
Equipment : Waveform monitor
Adjustment point : EVR adrs 33h
Spec. : (NTSC) A=116±2 IRE
B≦4 IRE
(PAL) A=810±15 mV
B≦28 mV



4-2-26. Pedestal Adjustment

Object : Close "C"
Equipment : Osciiloscope
Measuring point : TP9 on the PR215 board
Adjustment point : EVR adrs 2Eh
Spec. : (NTSC) A=35±5 mV
(PAL) A=30±5 mV

4-2-27. Rch and Bch Pedestal Adjustment

Object : Close "C"
Equipment : Vectorscope
Procedure :

1. Use the FUNCTION button to show adrs 2Dh.
2. Use the DATA button to put the luminescent spot on the center of the vectorscope.
3. Use the FUNCTION button to show adrs 2Fh.
4. Use the DATA button to put the luminescent spot on the center of the vectorscope.
5. Repeat the steps 1 to 4.

4-2-28. Gch BLACK SET Adjustment

Object : Close "C"
Equipment : Osciiloscope
Measuring point : TP9 on the PR215 board
Adjustment point : EVR adrs 02h
Spec. : (NTSC) A=35±5 mV
(PAL) A=30±5 mV

4-2-29. Rch and Bch BLACK SET Adjustment

Object : Close "C"
Equipment : Vectorscope
Procedure :

1. Use the FUNCTION button to show adrs 01h.
2. Use the DATA button to put the luminescent spot on the center of the vectorscope.
3. Use the FUNCTION button to show adrs 03h.
4. Use the DATA button to put the luminescent spot on the center of the vectorscope.
5. Repeat the steps 1 to 4.

6. Press the MENU button to display the menu, then press both the DATA UP/DOWN buttons to set Gain Step, 18 dB to 0 dB.
7. Press the MENU button to erase the menu, then use the FUNCTION button to show adrs 03h.

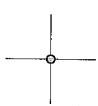
4-2-30. Gch Pedestal Readjustment

Object : Close "C"
Equipment : Oscilloscope
Measuring point : TP9 on the PR-215 board
Adjustment point : EVR adrs 2Eh
Spec. : (NTSC) A=35±5 mV
(PAL) A=30±5 mV

4-2-31. Rch and Bch Pedestal Readjustment

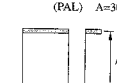
Object : Close "C"
Equipment : Vectorscope
Procedure :

1. Use the FUNCTION button to show adrs 2Dh.
2. Use the DATA button to put the luminescent spot on the center of the vectorscope.
3. Use the FUNCTION button to show adrs 2Fh.
4. Use the DATA button to put the luminescent spot on the center of the vectorscope.
5. Repeat the steps 1 to 4.



4-2-32. Gch BLACK SET Readjustment

Object : Close "C"
Equipment : Oscilloscope
Measuring point : TP9 on the PR-215 board
Adjustment point : EVR adrs 02h
Spec. : (NTSC) A=35±5 mV
(PAL) A=30±5 mV



4-2-33. Rch and Bch BLACK SET Readjustment

Object : Close "C"
Equipment : Vectorscope
Procedure :

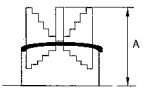
1. Use the FUNCTION button to show adrs 01h.
2. Use the DATA button to put the luminescent spot on the center of the vectorscope.
3. Use the FUNCTION button to show adrs 03h.
4. Use the DATA button to put the luminescent spot on the center of the vectorscope.

5. Press the MENU button to display the menu, then press both the DATA UP/DOWN buttons to set Gain Step, 18 dB to 0 dB.
6. Press the MENU button to erase the menu, then use the FUNCTION button to show adrs 03h.

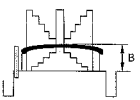
4-2-34. Gamma Readjustment

Object : Gray scale chart
Equipment : Oscilloscope and waveform monitor
Measuring point : TP9 on the PR-215 board
Procedure :

1. Use the FUNCTION button to show adrs 1Bh, then use the lens iris to adjust the TP9 waveform to A=1.0±0.01 V.



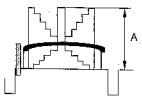
2. Put the SW401/AT-97 board to the OPE side.
3. Press the DATA UP button by one step to confirm the AWB OK indication.
4. Put the SW401/AT-97 board to the ADJ side.
5. Use the DATA button, and on the waveform monitor, to achieve the following adjustment.
   (NTSC) B=56±2 IRE
   (PAL) B=365±14 mV



4-2-35. Auto-Iris, AGC SET, CCD Iris Adjustment

Object : Gray scale chart
Equipment : Waveform monitor
Procedure :

1. Use the FUNCTION button to show adrs 52h, then use the lens iris to achieve the following adjustment.
   (NTSC) A=100±2 IRE
   (PAL) A=700±15 mV



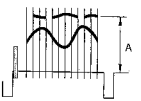
2. Turn on the auto iris switch of the lens, press the DATA UP or DOWN button, and record the data immediately before the white part A at the center rises.
3. Use the FUNCTION button to show adrs 51h, and set the data value to the values of the data in Step 2.
4. Use the FUNCTION button to show adrs 50h, and set the data value to the values of the data in Step 2.
5. Turn off the lens auto-iris switch.

4-2-36. RG RATIO (1), Aperture Adjustment

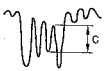
Object : Resolution chart
Equipment : Waveform monitor
Adjustment point : RV13 on the PR-215 board and EVR adrs 1Eh

Procedure :

1. Use the lens iris to achieve the following adjustment.
   (NTSC) A=100±2 IRE
   (PAL) A=700±14 mV



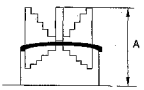
2. Put the SW401/AT-97 board to the OPE side.
3. Use the DATA UP button to make white balance adjustment.
4. Using RV13, make adjustment so that the section of 750 line resolution will not include any warp or distortion.
5. Put the SW401/AT-97 board to the ADJ side.
6. Use the FUNCTION button to show adrs 1Eh, and use the DATA button to achieve the following adjustment.
   (NTSC) C=7±2 IRE
   (PAL) C=50±14 mV



4-2-37. RG RATIO (2), VDTL, H/V RATIO Adjustment

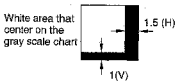
Camera mode : Gray scale chart
Equipment : Waveform monitor and oscilloscope
Measuring point : TP202 on the IF-518 board
Measuring point : RV207 on the IF-518 board
Procedure :

1. Use the lens iris to make adjustment so that the waveform will become as follows on the waveform monitor.
   (NTSC) A=80±2 IRE
   (PAL) A=560±14 mV



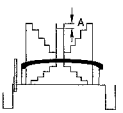
2. Adjust RV207 so that the waveform of TP202 will be B=0.

3. Adjust RV207 so that the detail amount will be 1.5(H) : 1(V) on the monitor screen.



4-2-38. DTL Adjustment

Object : Gray scale chart
Equipment : Waveform monitor
Adjustment point : EVR adrs 21h
Spec. : (NTSC) A=1.5±3 IRE
(PAL) A=105±21 mV



4-2-39. Manual WB Adjustment (3200 K)

Object : All white pattern
Equipment : Waveform monitor and vectorscope
Procedure :

1. Put the SW401/AT-97 board to the OPE side.
2. Use the lens iris to adjust the waveform to 100% on the waveform monitor.
3. Use the DATA UP button to make white balance adjustment and confirm the AWB OK indication.
4. Press the MENU button to show the menu, then select WHT.Bal and put it in the menu mode. Here, confirm R gain 00 and B gain 00, and press the MENU button to erase the menu.
5. Put the SW401/AT-97 board back to the ADJ side.
6. Use the FUNCTION button to show adrs CCh/CEh, and use the DATA button to put the luminescent spot on the center of the vectorscope. Record the present data values.
7. Set the data value on adrs CCh onto adrs CDh, and the data value on adrs CEh onto adrs CFh.
8. Press the MENU button to put WHT.Bal back to the auto mode.
9. Press the MENU button to erase the menu.

After adjustment completion, be sure to put the SW401/AT-97 board back to the OPE side.

4-2-40. ATW Adjustment (3200K)

Object : Gray scale chart
Equipment : Waveform monitor
Procedure :

1. Put the SW401/AT-97 board to the OPE side.
2. Use the lens iris to adjust the waveform to 80% on the waveform monitor.
3. Use the DATA UP button to make white balance adjustment and confirm the AWB OK indication.
4. Put the SW401/AT-97 board back to the ADJ side.
5. Use the FUNCTION button to show adrs C0h/C4h, and record the present data values.
6. According to the table below, set the data values corresponding to the C0h data onto adrs D0h.

ATW ADJ table

Data on adrs C0h	Data to be set on adrs D0h
46h or less	10h
47h	0Fh
48h	0Eh
49h	0Dh
4Ah	0Ch
4Bh	0Bh
4Ch	0Ah
4Dh	09h
4Eh	08h
4Fh	07h
50h	06h
51h	05h
52h	04h
53h	03h
54h	02h
55h	01h
56h	00h
57h	FFh
58h	FEh
59h	FEh
5Ah	FCh
5Bh	FBh
5Ch	FAh
5Dh	F9h
5Eh	F8h
5Fh	F7h
60h	F6h
61h	F5h
62h	F4h
63h	F3h
64h	F2h
65h	F1h
66h or more	F0h

7. According to the table below, set the data values corresponding to the C4h data onto adrs D2h.

Data on adrs C4h	Data to be set on adrs D2h
50h or less	10h
51h	0Fh
52h	0Eh
53h	0Dh
54h	0Ch
55h	0Bh
56h	0Ah
57h	09h
58h	08h
59h	07h
5Ah	06h
5Bh	05h
5Ch	04h
5Dh	03h
5Eh	02h
5Fh	01h
60h	00h
61h	FFh
62h	FEh
63h	FDh
64h	FCh
65h	FBh
66h	FAh
67h	F9h
68h	F8h
69h	F7h
6Ah	F6h
6Bh	F5h
6Ch	F4h
6Dh	F3h
6Eh	F2h
6Fh	F1h
70h or more	F0h

4-2-41. ATW Adjustment (5600K)

Object : Gray scale chart
Equipment : Waveform monitor
Procedure :

1. Put the SW401/AT-97 board to the OPE side.
2. Call the menu by pressing the MENU button, select C. Temp, and set it to 5600K.
3. Use the lens iris to adjust the waveform to 80% on the waveform monitor.
4. Use the DATA UP button to make white balance adjustment and confirm the AWB OK indication.
5. Put the SW401/AT-97 board back to the ADJ side.
6. Use the FUNCTION button to show adrs C2h/C6h, and record the present data values.
7. According to the table below, set the data values corresponding to the C2h data onto adrs D1h.

Data on adrs C2h	Data to be set on adrs D1h
58h or less	10h
59h	0Fh
5Ah	0Eh
5Bh	0Dh
5Ch	0Ch
5Dh	0Bh
5Eh	0Ah
5Fh	09h
60h	08h
61h	07h
62h	06h
63h	05h
64h	04h
65h	03h
66h	02h
67h	01h
68h	00h
69h	FFh
6Ah	FEh
6Bh	FDh
6Ch	FCh
6Dh	FBh
6Eh	FAh
6Fh	F9h
70h	F8h
71h	F7h
72h	F6h
73h	F5h
74h	F4h
75h	F3h
76h	F2h
77h	F1h
78h or more	F0h

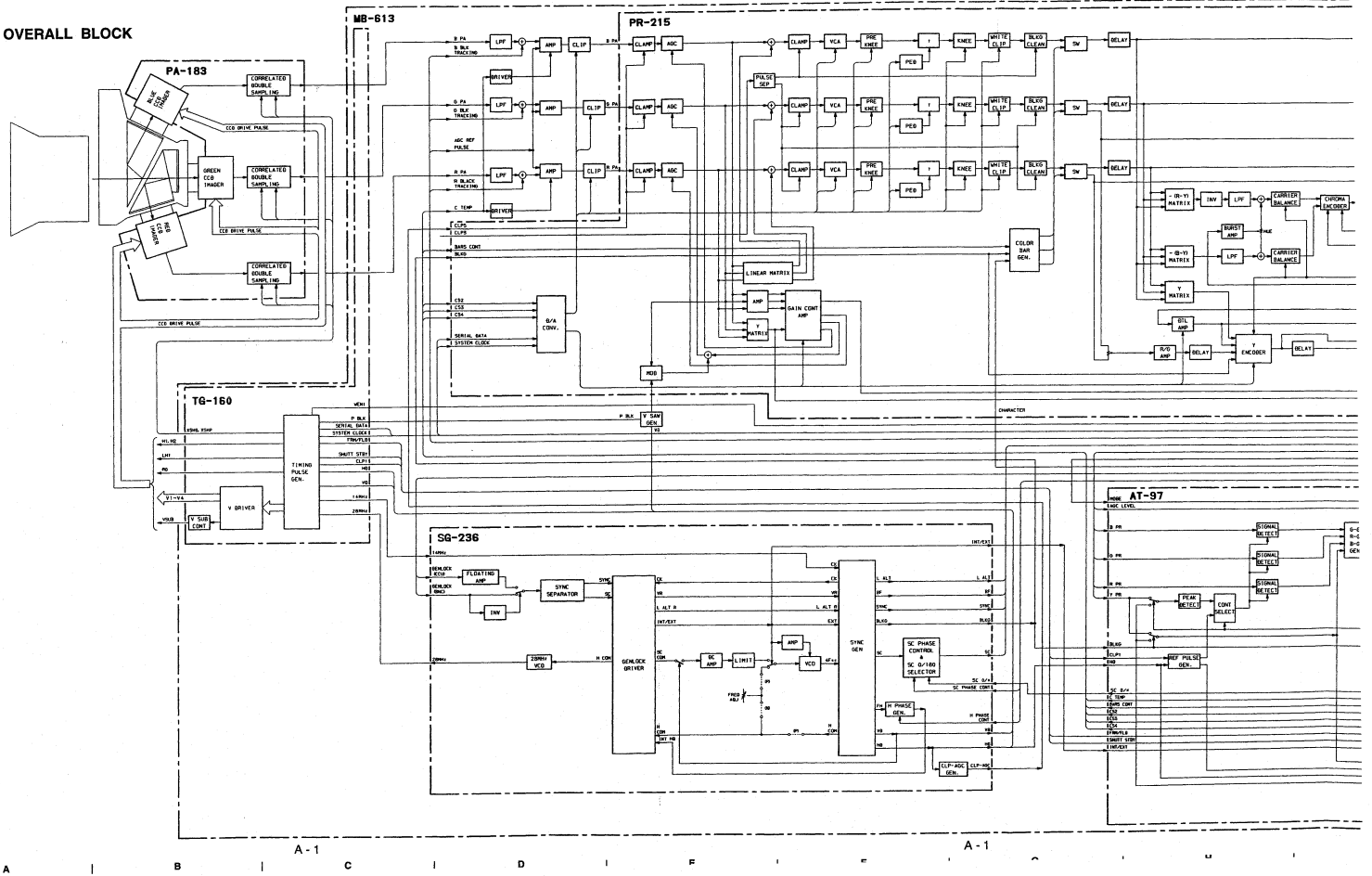
8. According to the table below, set the data values corresponding to the C6h data onto adrs D3h.

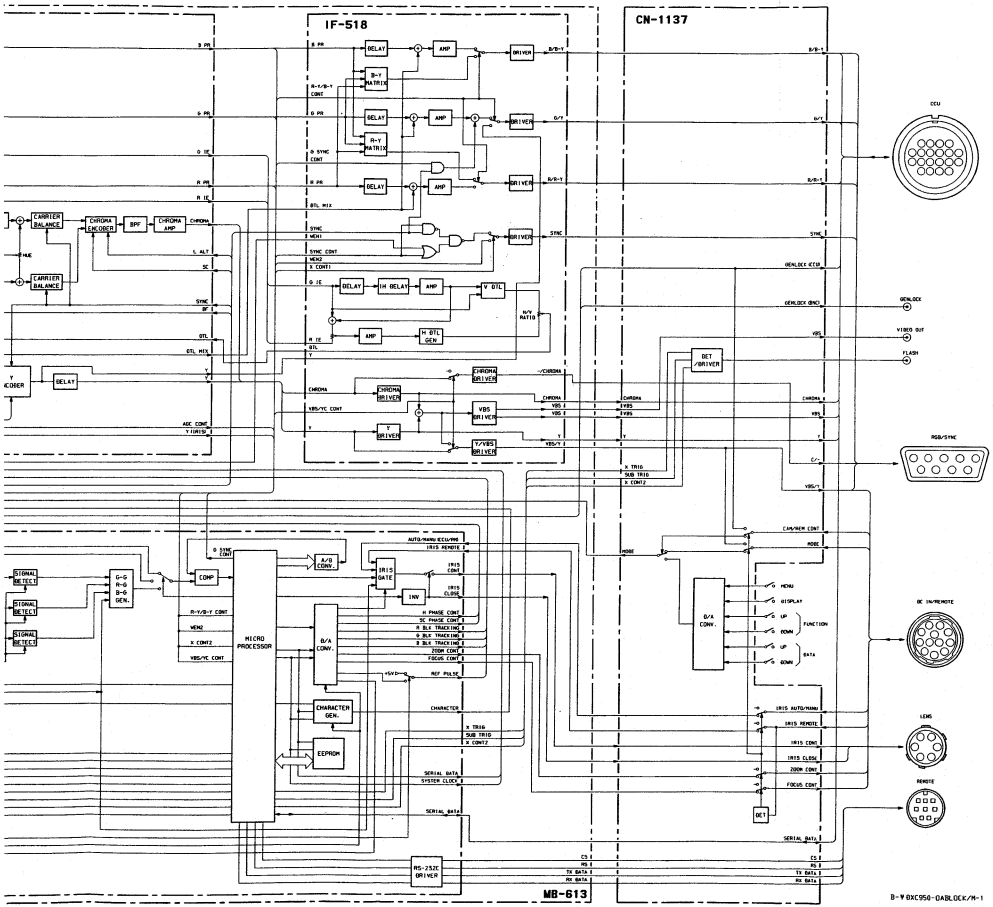
Data on adrs C6h	Data to be set on adrs D3h
18h or less	1Dh
19h	1Ch
1Ah	1Bh
1Bh	1Ah
1Ch	19h
1Dh	18h
1Eh	17h
1Fh	16h
20h	15h
21h	14h
22h	13h
23h	12h
24h	11h
25h	10h
26h	0Fh
27h	0Eh
28h	0Dh
29h	0Ch
2Ah	0Bh
2Bh	0Ah
2Ch	09h
2Dh	08h
2Eh	07h
2Fh	06h
30h	05h
31h	04h
32h	03h
33h	02h
34h	01h
35h	00h
36h	FFh
37h	FEh
38h	FDh
39h	FCh
3Ah	FBh
3Bh	FAh
3Ch	F9h
3Dh	F8h
3Eh	F7h
3Fh	F6h
40h	F5h
41h	F4h
42h	F3h
43h	F2h
44h	F1h
45h or more	F0h

After completion the adjustment, be sure to put the SW401/AT-97 board back to the OPE side, press the MENU button, and set C. Temp to 3200K again.

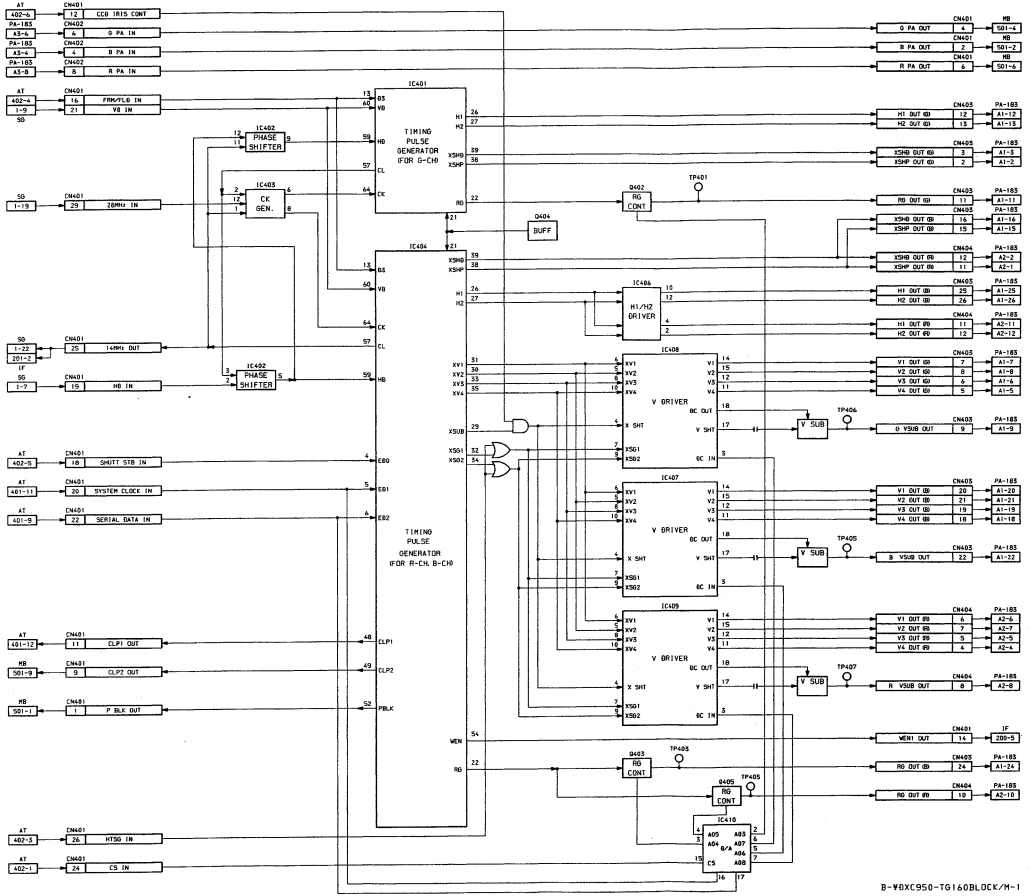
SECTION A
BLOCK DIAGRAMS

OVERALL BLOCK




IF-518
CN-1137
MB-613
B-Y MATRIX
R-Y MATRIX
DELAY
AMP
DRIVER
CARRIER BALANCE
CHROMA ENCODER
BPF
CHROMA AMP
H DTL GEN
V DTL
CHROMA DRIVER
VBS DRIVER
Y DRIVER
Y/VBS DRIVER
SET /DRIVER
MICRO PROCESSOR
A/D CONV.
D/A CONV.
EEPROM
CHARACTER GEN.
IRIS GATE
INV
CONF
RS-232C DRIVER
SIGNAL DETECT
CCU
RGB/SYNC
DC IN/REMOTE
LENS
REMOTE
GENLOCK
VIDEO OUT
FLASH
MENU
DISPLAY
UP
DOWN
FUNCTION
DATA
B-Y8XC950-0ABLOCK/M-1

TG-160 BLOCK

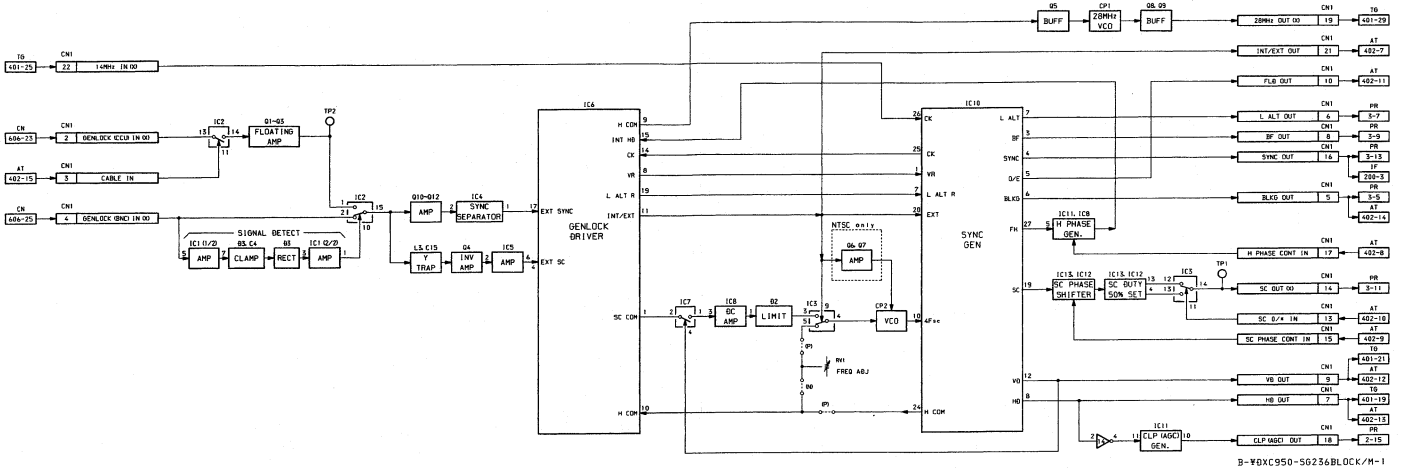


A-2

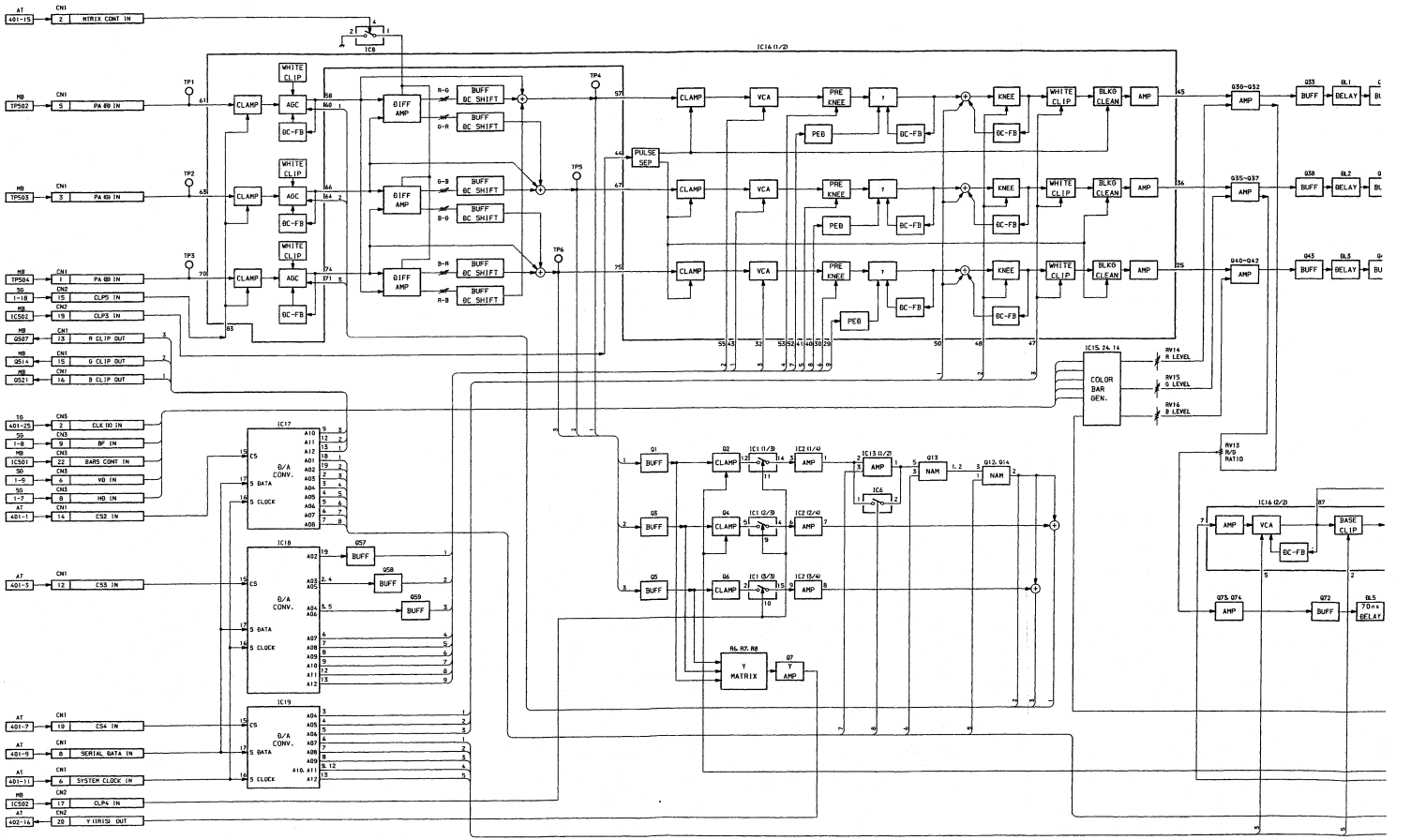
A-2

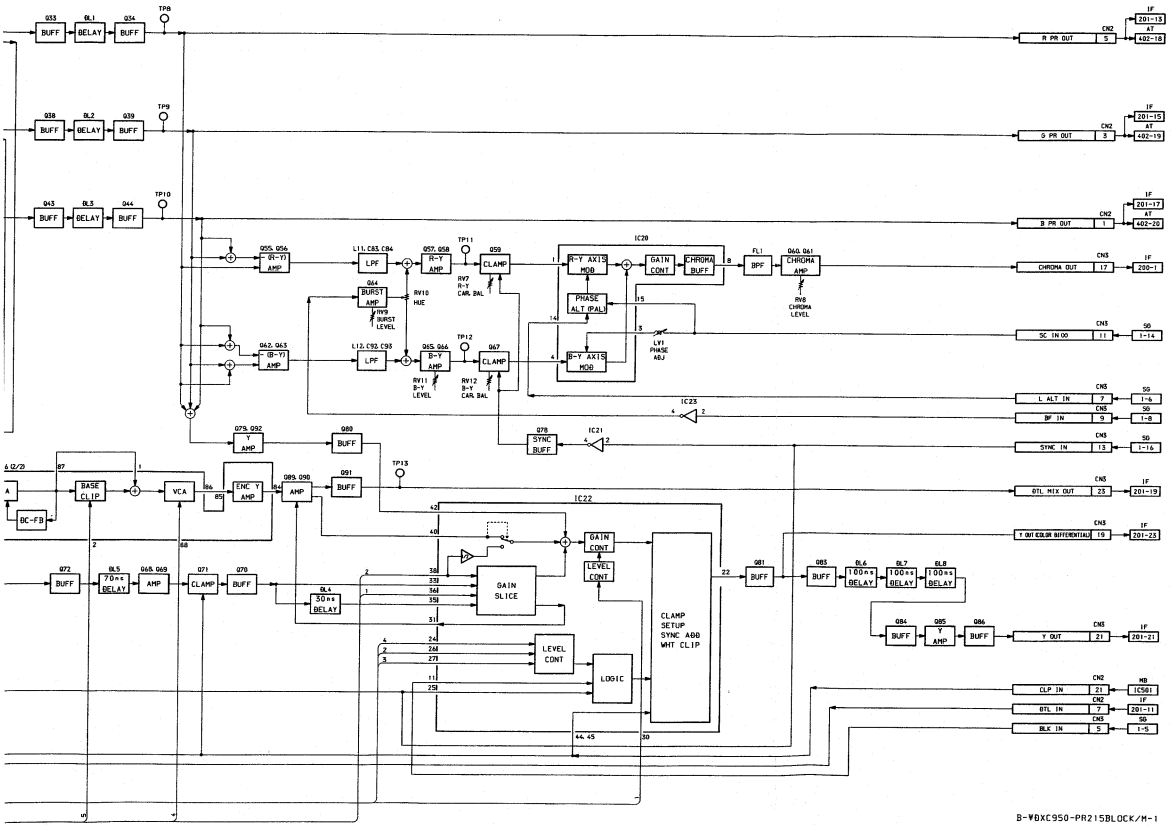
SONY-SP0307 / DRUCK 3

SG-236 BLOCK


GENLOCK DRIVER
SYNC GEN
FLOATING AMP
SIGNAL DETECT
SYNC SEPARATOR
Y TRAP
FREQ ADJ
VCO
LIMIT
BUFF
28MHz VCO
H PHASE GEN.
SC PHASE SHIFTER
SC DUTY 50% SET
CLP (AGC) GEN.
NTSC only
14MHz IN 00
GENLOCK (CCU) IN 00
CABLE IN
GENLOCK (BNC) IN 00
28MHz OUT 00
INT/EXT OUT
FLD OUT
L ALT OUT
BF OUT
SYNC OUT
BLKG OUT
H PHASE CONT IN
SC OUT 00
SC D/A IN
SC PHASE CONT IN
VD OUT
HD OUT
CLP (AGC) OUT
B-¥0XC950-SG236BLOCK/M-1

PR-215 BLOCK


MATRIX CONT IN
PA RB IN
PA G IN
PA B IN
CLPS IN
CLP3 IN
R CLIP OUT
G CLIP OUT
B CLIP OUT
CLK 00 IN
BF IN
BARS CONT IN
VD IN
HD IN
CS2 IN
CS3 IN
CS4 IN
SERIAL DATA IN
SYSTEM CLOCK IN
CLP4 IN
Y (HD/SD) OUT
WHITE CLIP
AGC
BC-FB
CLAMP
DIFF AMP
BUFF
BC SHIFT
PULSE SEP
VCA
PRE KNEE
PED
KNEE
BLKG CLEAN
AMP
DELAY
COLOR BAR GEN.
R LEVEL
G LEVEL
B LEVEL
R/B RATIO
B/A CONV.
S DATA
S CLOCK
Y MATRIX
BASE CLIP
70n DELAY

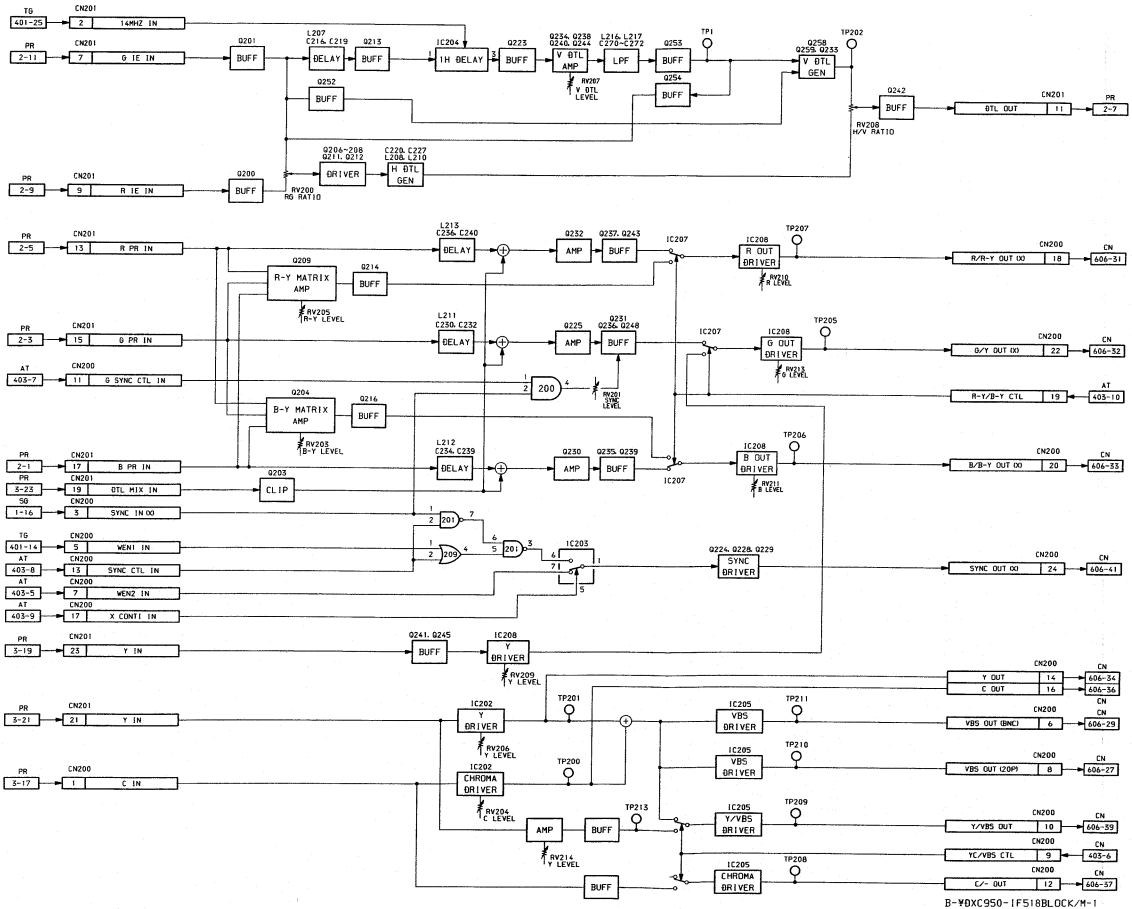


B-¥8XC950-PR215BLOCK/M-1

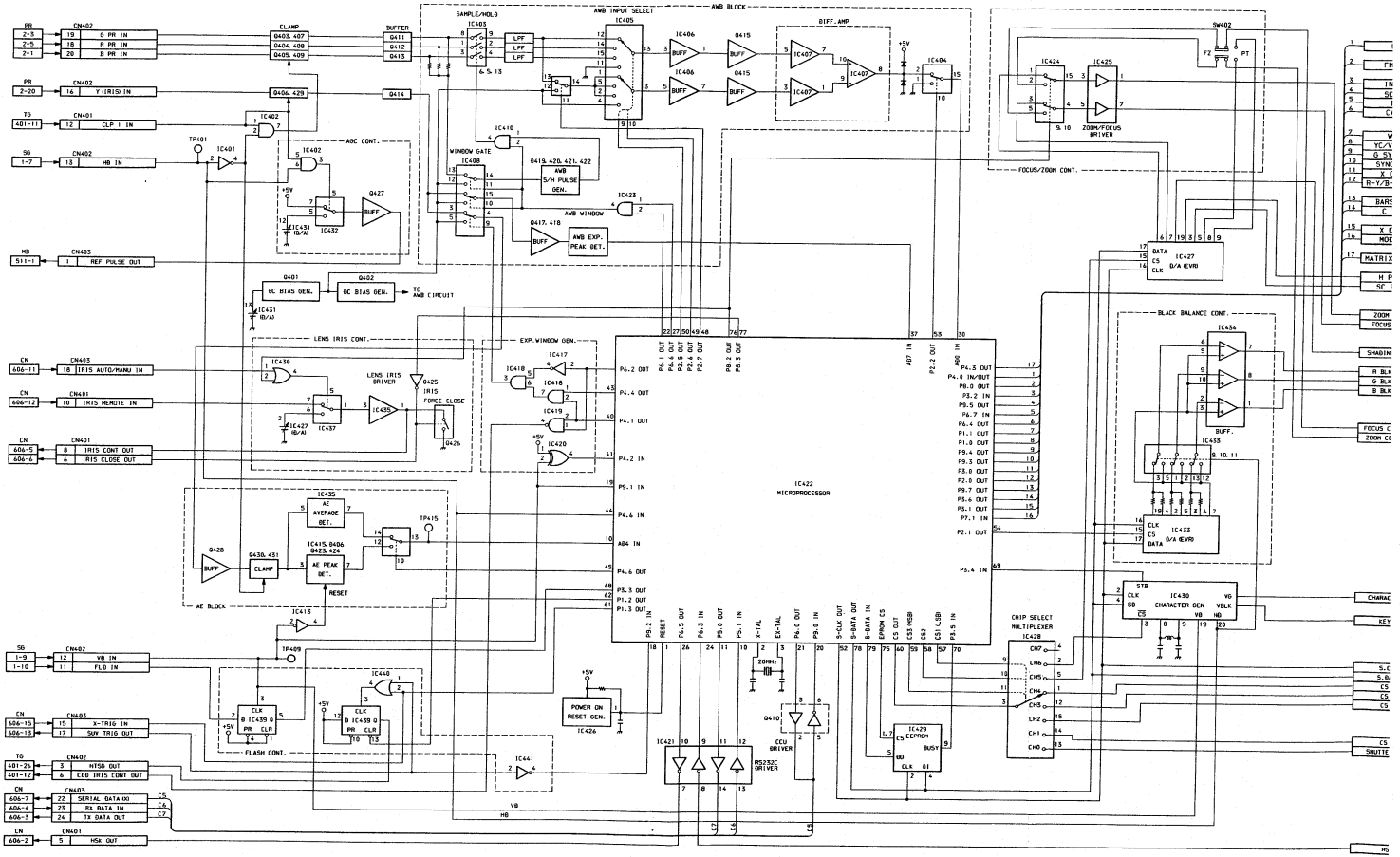
A-3

A-3

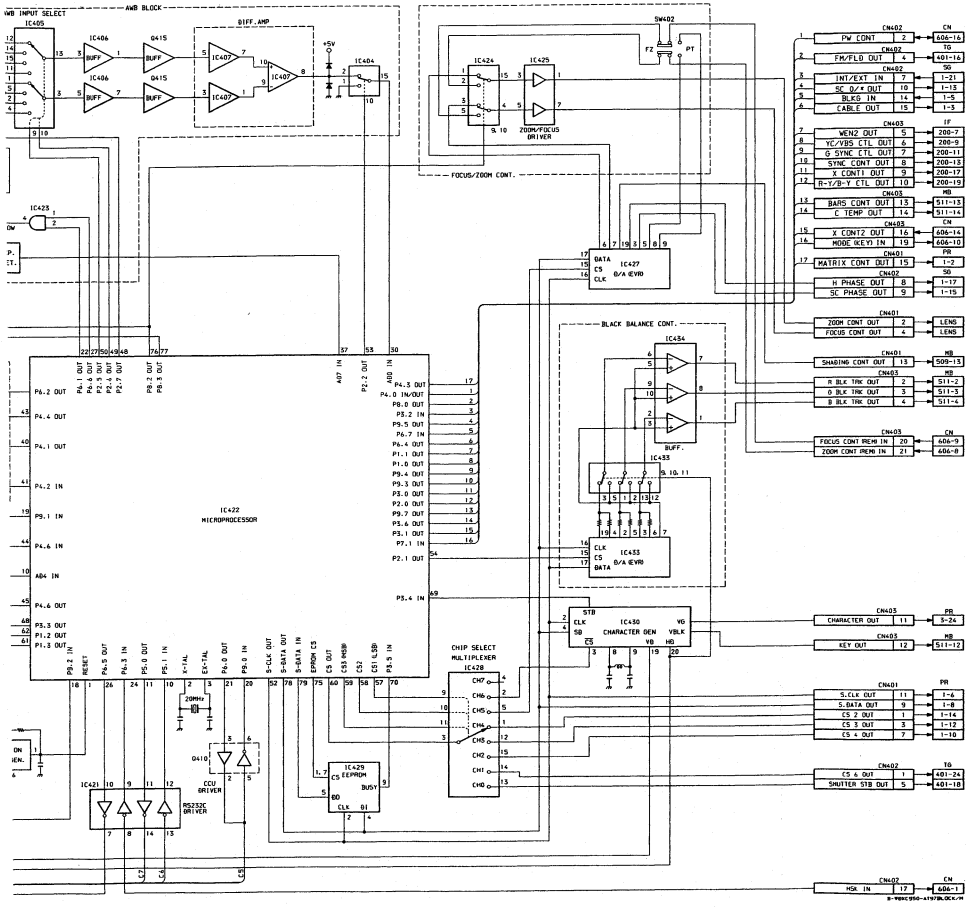
IF-518 BLOCK



AT-97 BLOCK

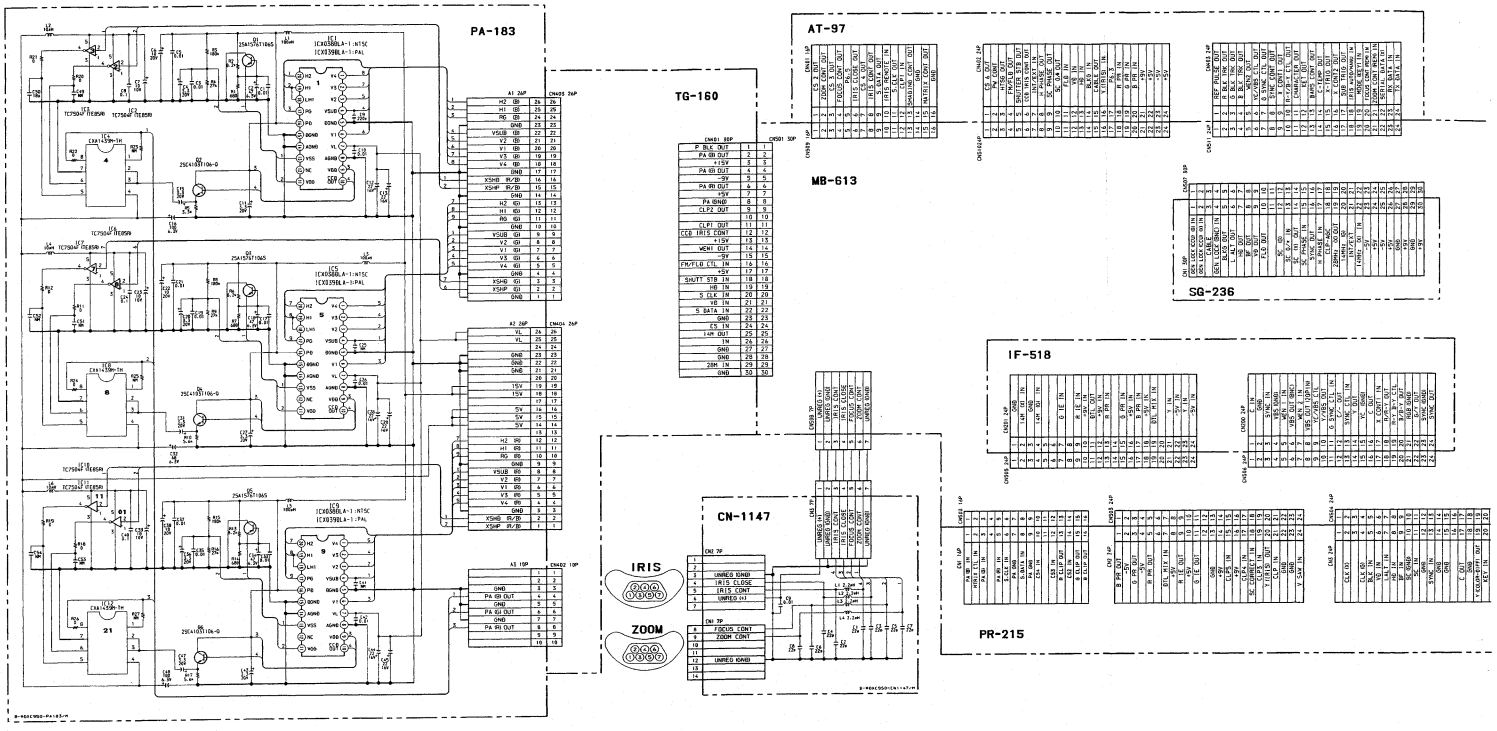


DXC-950/950P
DXC-970MD

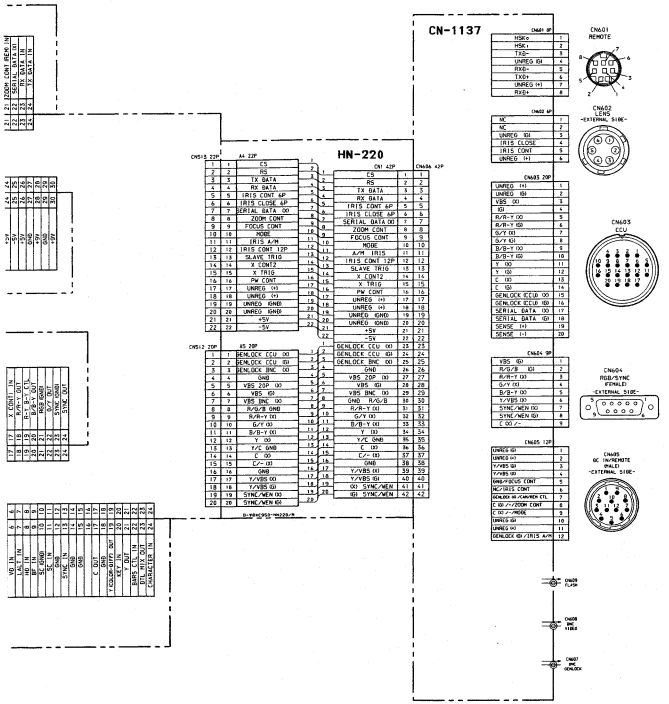

AWB BLOCK
AWB INPUT SELECT
IC405
DIFF.AMP
IC406
Q415
IC407
IC404
+5V
IC424
IC425
ZOOM/FOCUS DRIVER
SW402
F2
PT
FOCUS/ZOOM CONT.
IC423
IC427
D/A CVRT
BLACK BALANCE CONT.
IC434
BUFF.
IC433
IC422
MICROPROCESSOR
IC428
CHIP SELECT MULTIPLEXER
IC430
CHARACTER GEN
IC429
EEPROM
BUSY
20MHz
Q410
CCU DRIVER
IC421
RS232C DRIVER
CN402
PW CONT
FM/FLD OUT
INT/EXT IN
SC D/+ OUT
BLKG IN
CABLE OUT
CN403
WEN2 OUT
YC/VBS CTL OUT
G SYNC CTL OUT
SYNC CONT OUT
X CONT1 OUT
R-Y/B-Y CTL OUT
BARS CONT OUT
C TEMP OUT
X CONT2 OUT
MODE (KEY) IN
CN401
MATRIX CONT OUT
H PHASE OUT
SC PHASE OUT
ZOOM CONT OUT
FOCUS CONT OUT
SHADING CONT OUT
R BLK TRK OUT
G BLK TRK OUT
B BLK TRK OUT
FOCUS CONT REMI IN
ZOOM CONT REMI IN
CHARACTER OUT
KEY OUT
S.CLK OUT
S.DATA OUT
CS 2 OUT
CS 3 OUT
CS 4 OUT
CS 6 OUT
SHUTTER STB OUT
HSK IN

SECTION B
SCHEMATIC DIAGRAMS AND PRINTED CIRCUIT BOARDS

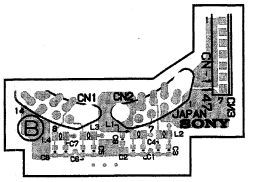
FRAME WIRING



FRAME WIRING CN-1147, HN-220, PA-182

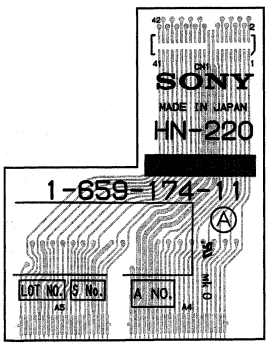


CN-1147 BOARD



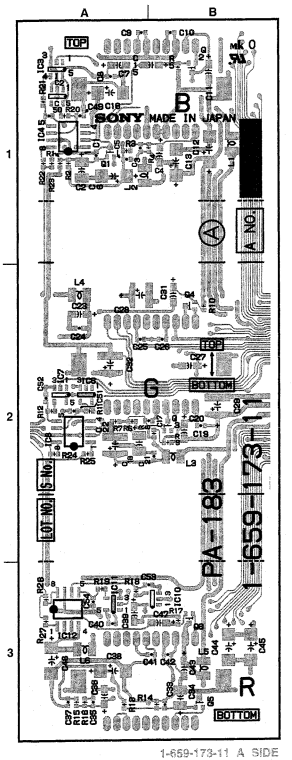
1-659-175-11 B SIDE

HN-220 BOARD



1-659-174-11 A SIDE

PA-182 BOARD

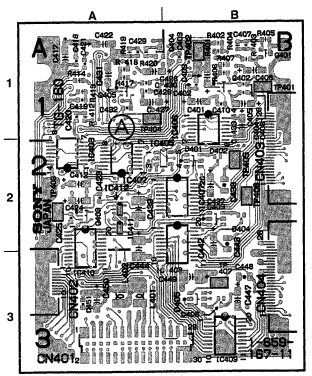


1-659-173-11 A SIDE

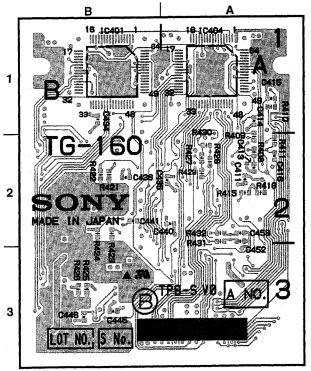
PA-183 (1-659-173-11)

IC2	A-1
IC3	A-1
IC4	A-1
IC6	B-1
IC7	B-1
IC8	B-1
IC10	C-1
IC11	C-1
IC12	C-1
Q1	A-1
Q2	A-1
Q3	B-1
Q4	B-1
Q5	C-1
Q6	C-1

TG-160 BOARD



1-659-167-11 A SIDE



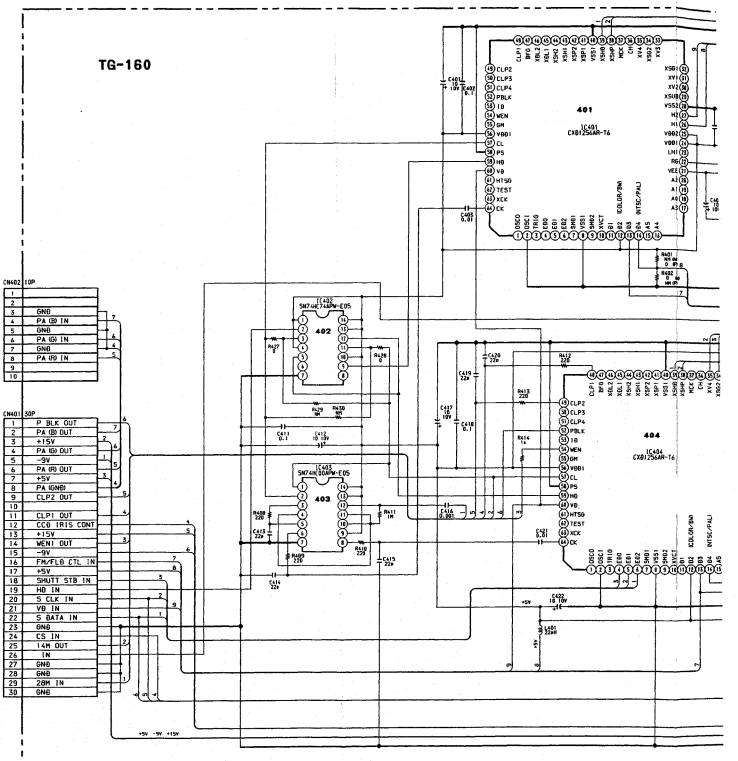
1-659-167-11 B SIDE

TG-160 (1-659-167-11)

*: B SIDE

D401	B-2
D402	B-2
D403	B-2
D404	B-2
D405	B-3
D406	B-3
*IC401	B-1
IC402	A-2
IC403	A-2
*IC404	A-1
IC405	B-2
IC406	B-1
IC407	B-2
IC408	B-2
IC409	B-3
IC410	A-2
IC411	A-2
IC412	A-2
Q402	B-1
Q403	A-2
Q404	A-1
Q405	A-1

TG-160 BOARD



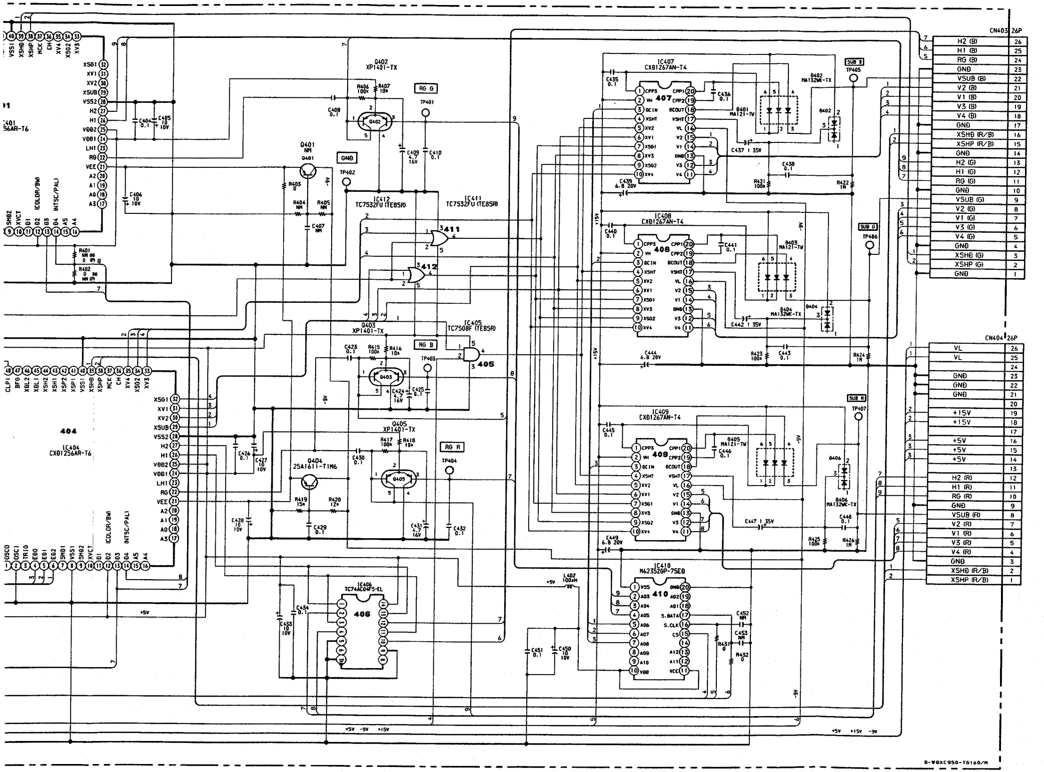
1

2

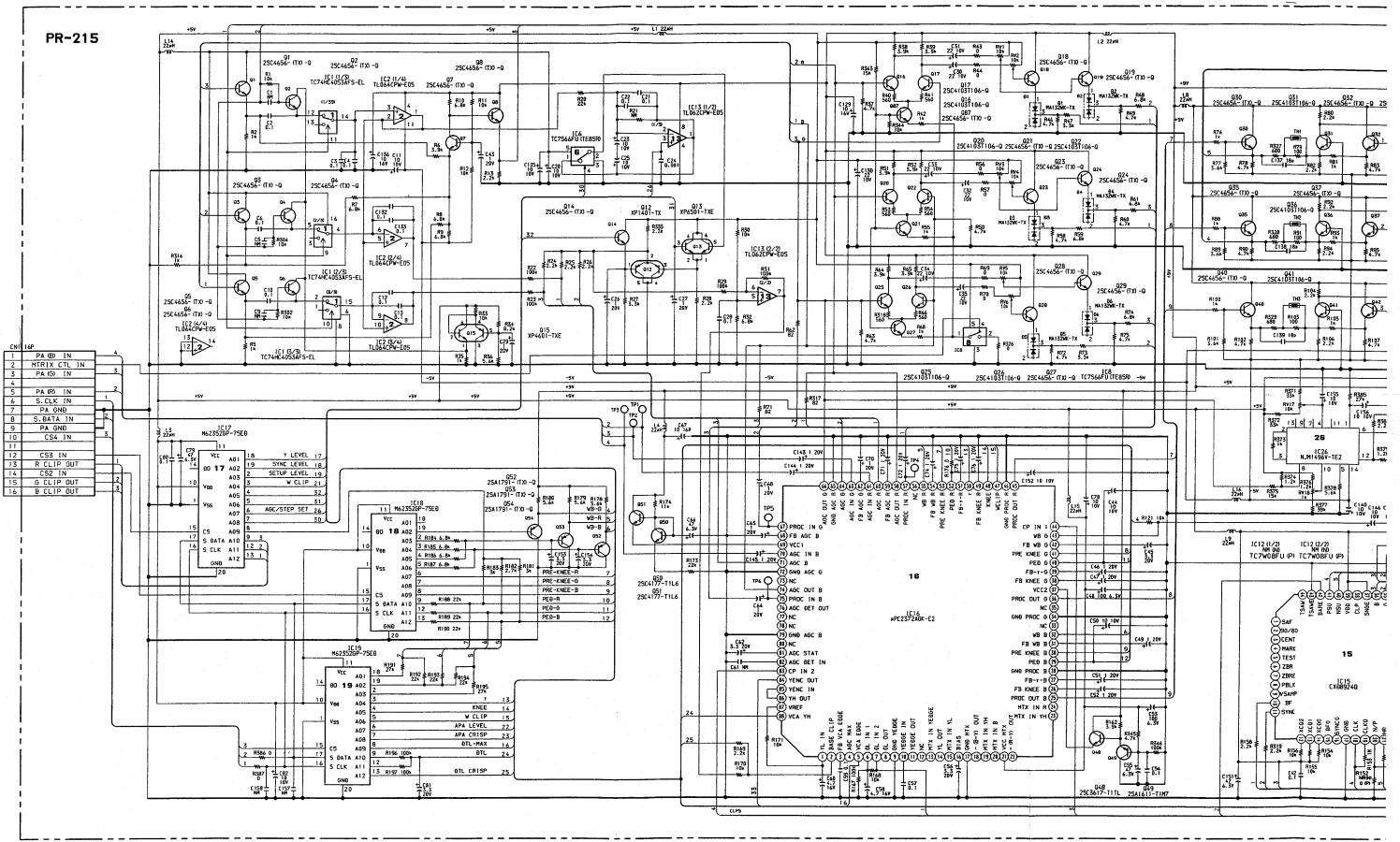
3

4

5

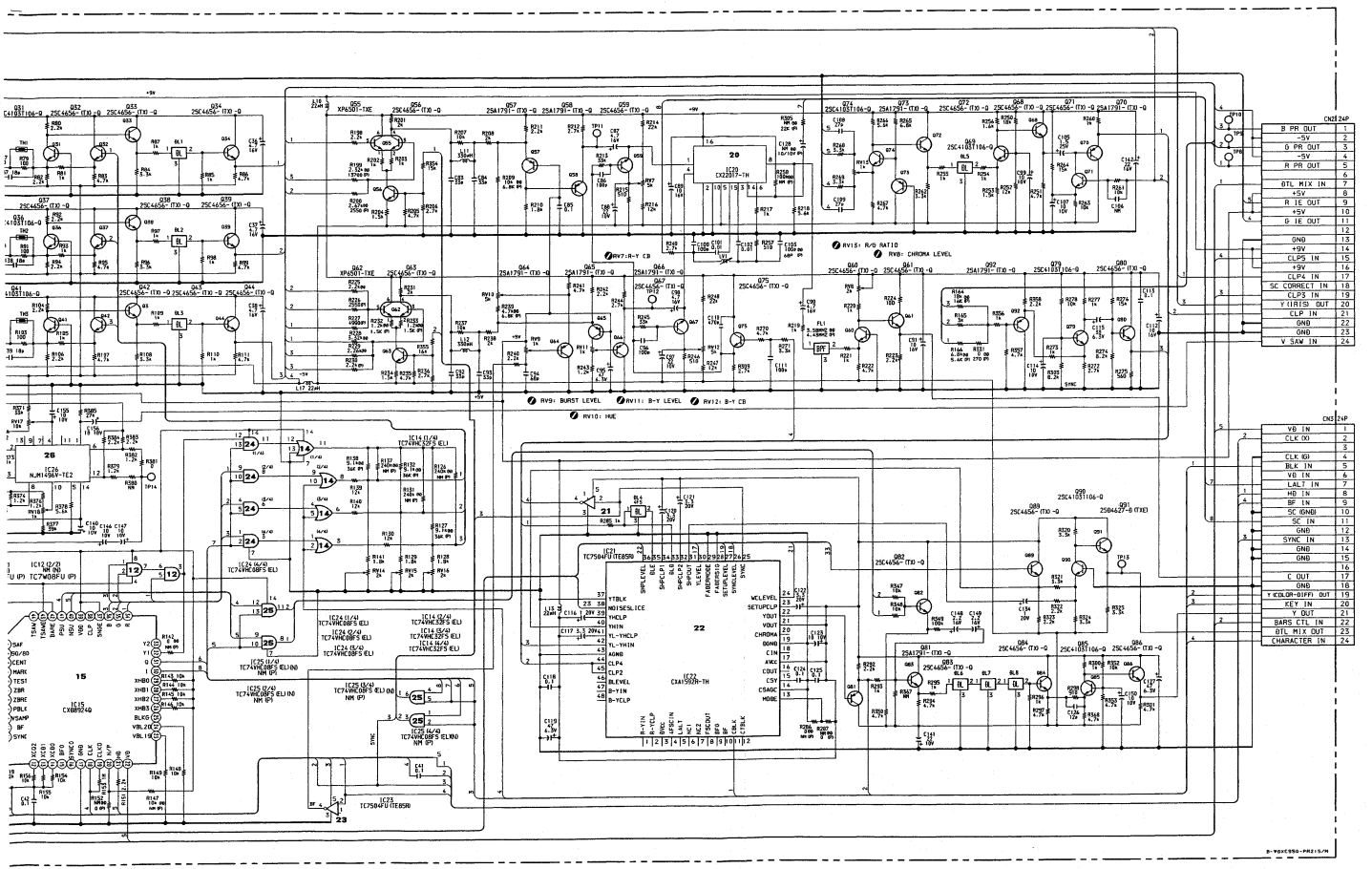

CN403 26P
CN404 26P
IC407 CXD1267AN-T4
IC408 CXD1267AN-T4
IC409 CXD1267AN-T4
IC410 M62352GP-75ED
IC406 TC74AC04FS-EL
IC404 CXD1256AR-T6
IC405 TC7S08F (TE85R)
IC411 TC7S32FU (TE85R)
IC412 TC7S32FU (TE85R)
Q402 XP1401-TX
Q403 XP1401-TX
Q405 XP1401-TX
Q404 2SA1611-T1M6
B-V0XC950-TG160/N

PR-215 BOARD



B - 4

B - 4

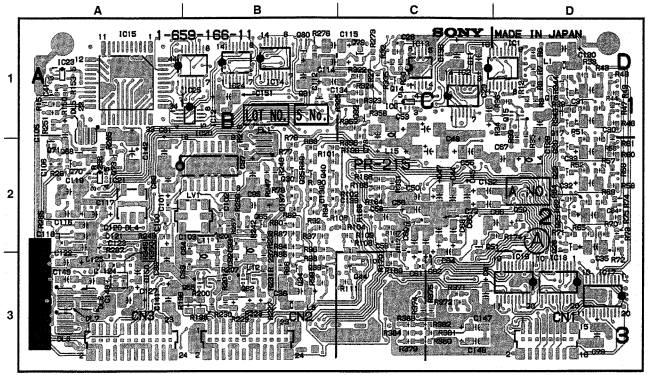


B-4 B-4

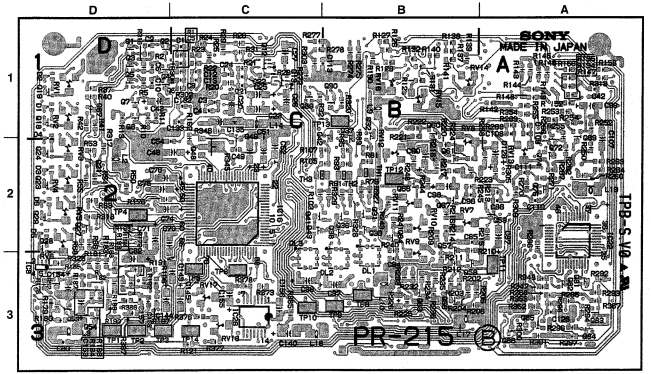
DXC-950/950P
DXC-970MD

I J K L M N O P

PR-215 BOARD



1-659-166-11 A SIDE



1-659-166-11 B SIDE

PR-215 (1-659-166-11)

*: B SIDE

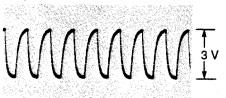
*D1	D-1	*Q56	B-3
*D2	D-1	*Q57	B-2
*D3	D-2	*Q58	B-3
*D4	D-2	*Q59	A-2
*D5	D-2	*Q60	B-1
*D6	D-2	*Q61	B-2
		Q62	B-3
IC1	D-1	*Q63	B-3
IC2	C-2	*Q64	B-2
IC6	C-1	Q65	B-2
*IC8	D-3	*Q66	B-2
IC13	C-1	*Q67	B-2
IC14	B-1	Q68	A-2
IC15	A-1	*Q69	A-1
*IC16	C-2	Q70	A-2
IC17	D-3	Q71	A-2
IC18	D-3	*Q72	A-2
IC19	D-3	Q73	A-2
IC20	B-2	Q74	A-2
IC21	A-2	*Q75	A-2
*IC22	A-2	Q79	C-1
IC23	A-1	Q80	B-1
IC24	B-1	*Q81	A-3
IC25	B-1	*Q82	A-3
*IC26	C-3	*Q83	A-3
		*Q84	A-3
*Q1	D-1	*Q85	A-3
*Q2	D-1	*Q86	A-3
*Q3	D-1	*Q87	D-1
*Q4	D-1	*Q89	C-1
*Q5	D-1	*Q90	B-1
*Q6	D-1	Q91	B-1
*Q7	D-1	*Q92	C-1
*Q8	D-1		
*Q12	C-1		
*Q13	C-1		
Q14	C-1		
Q15	D-1		
Q16	D-1		
Q17	D-1		
*Q18	D-1		
*Q19	D-1		
Q20	D-2		
*Q21	D-2		
Q22	D-2		
*Q23	D-2		
*Q24	D-2		
Q25	D-2		
Q26	D-2		
*Q27	D-2		
*Q28	D-2		
*Q29	D-2		
Q30	B-2		
*Q31	B-2		
*Q32	B-1		
*Q33	B-2		
Q34	B-3		
Q35	B-2		
*Q36	B-2		
*Q37	B-2		
*Q38	B-2		
Q39	B-3		
Q40	B-2		
*Q41	C-2		
*Q42	B-2		
*Q43	C-2		
Q44	C-3		
*Q48	C-2		
*Q49	C-2		
Q50	D-2		
Q51	C-2		
*Q52	D-3		
*Q53	D-3		
*Q54	D-3		
Q55	B-3		

PR-215 BOARD

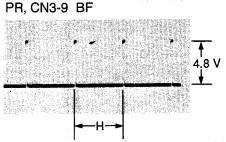
NOTE:

- BARS button → "BARS"
- Gain : Step, 0 dB
- C. Temp : 3200 K
- WHT. Bal : R paint, off
  B paint, off
- Shutter : off

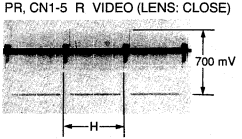
PR, CN3-11 SC



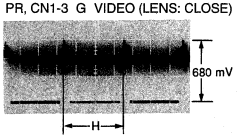
PR, CN3-9 BF



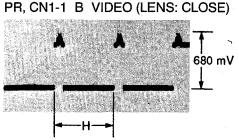
PR, CN1-5 R VIDEO (LENS: CLOSE)



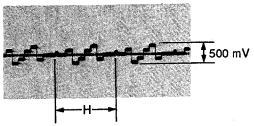
PR, CN1-3 G VIDEO (LENS: CLOSE)



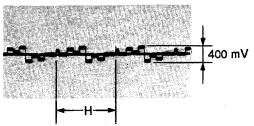
PR, CN1-1 B VIDEO (LENS: CLOSE)



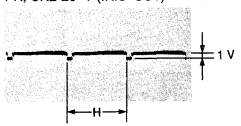
PR, TP11 R–Y



PR, TP12 B–Y



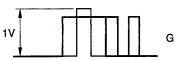
PR, CN2-20 Y (IRIS OUT)



PR, TP8 R PR (NTSC)

PR, TP8 R PR (PAL)

PR, TP9 G PR (NTSC)

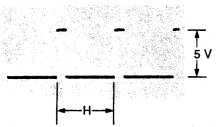


PR, TP9 G PR (PAL)

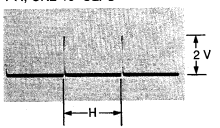
PR, TP10 B PR (NTSC)

PR, TP10 B PR (PAL)

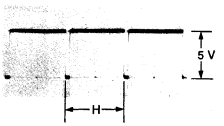
PR, CN2-17 CLP4



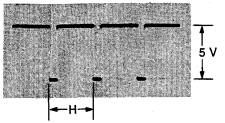
PR, CN2-19 CLP3



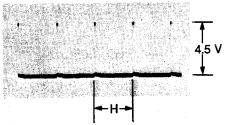
PR, 3-13 SYNC



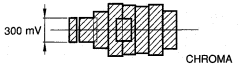
PR, 3-5 BLKG



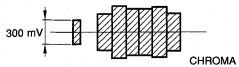
PR, CN2-21 CLP



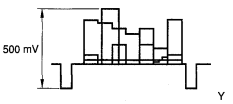
PR, CN3-17 CHROMA (NTSC)



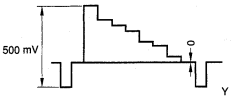
PR, CN3-17 CHROMA (PAL)



PR, CN3-21 Y (NTSC)



PR, CN3-21 Y (PAL)

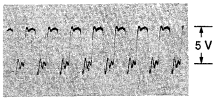


IF-518 BOARD

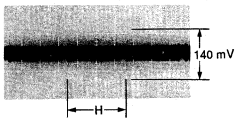
NOTE:

- BARS button → "BARS"
- Gain : Step, 0 dB
- C. Temp : 3200 K
- WHT. Bal : R paint, off
  B paint, off
- Shutter : off

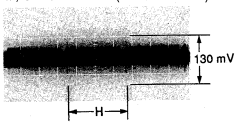
IF, CN201-2 14 MHz



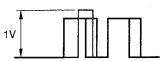
IF, CN201-7 G IE (LENS: CLOSE)



IF, CN201-9 R IE (LENS: CLOSE)

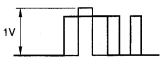


IF, CN201-13 R PR (NTSC)

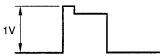


IF, CN201-13 R PR (PAL)

IF, CN201-15 G PR (NTSC)



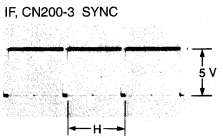
IF, CN201-15 G PR (PAL)



IF, CN201-17 B PR (NTSC)

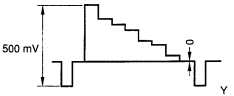
IF, CN201-17 B PR (PAL)

IF, CN200-3 SYNC

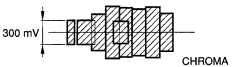


IF, CN201-21 Y (NTSC)

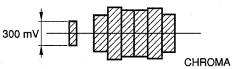
IF, CN201-21 Y (PAL)



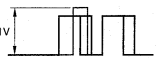
IF, CN200-1 CHROMA (NTSC)



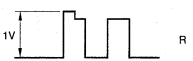
IF, CN200-1 CHROMA (PAL)



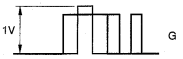
IF, CN200-18 R/R–Y (NTSC)



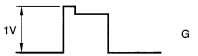
IF, CN200-18 R/R–Y (PAL)



IF, CN200-22 G/Y (NTSC)



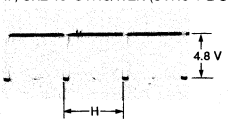
IF, CN200-22 G/Y (PAL)



IF, CN200-20 B/B–Y (NTSC)

IF, CN200-20 B/B–Y (PAL)

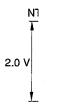
IF, CN2-15 SYNC/WEN (SYNCのとき)



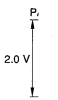
IF, CN

IF, CN

IF, CN



IF, CN



IF, CN

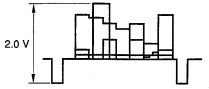
600 mV

IF, CN

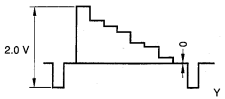
600 mV

IF-518 BOARD

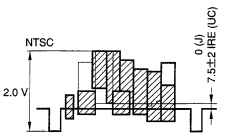
IF, CN200-14 Y (NTSC)



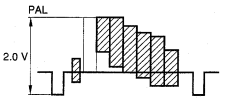
IF, CN200-14 Y (PAL)



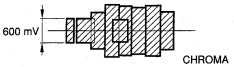
IF, CN200-6 VBS (NTSC)



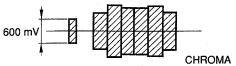
IF, CN200-6 VBS (PAL)

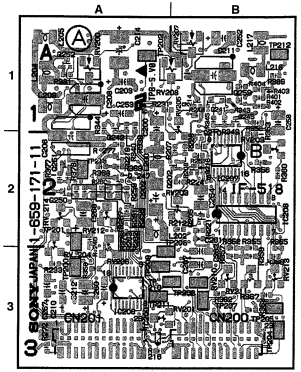


IF, CN200-16 CHROMA (NTSC)

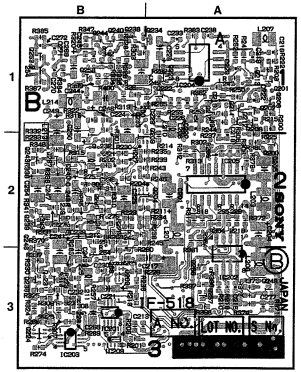


IF, CN200-16 CHROMA (PAL)





1-659-171-11 A SIDE



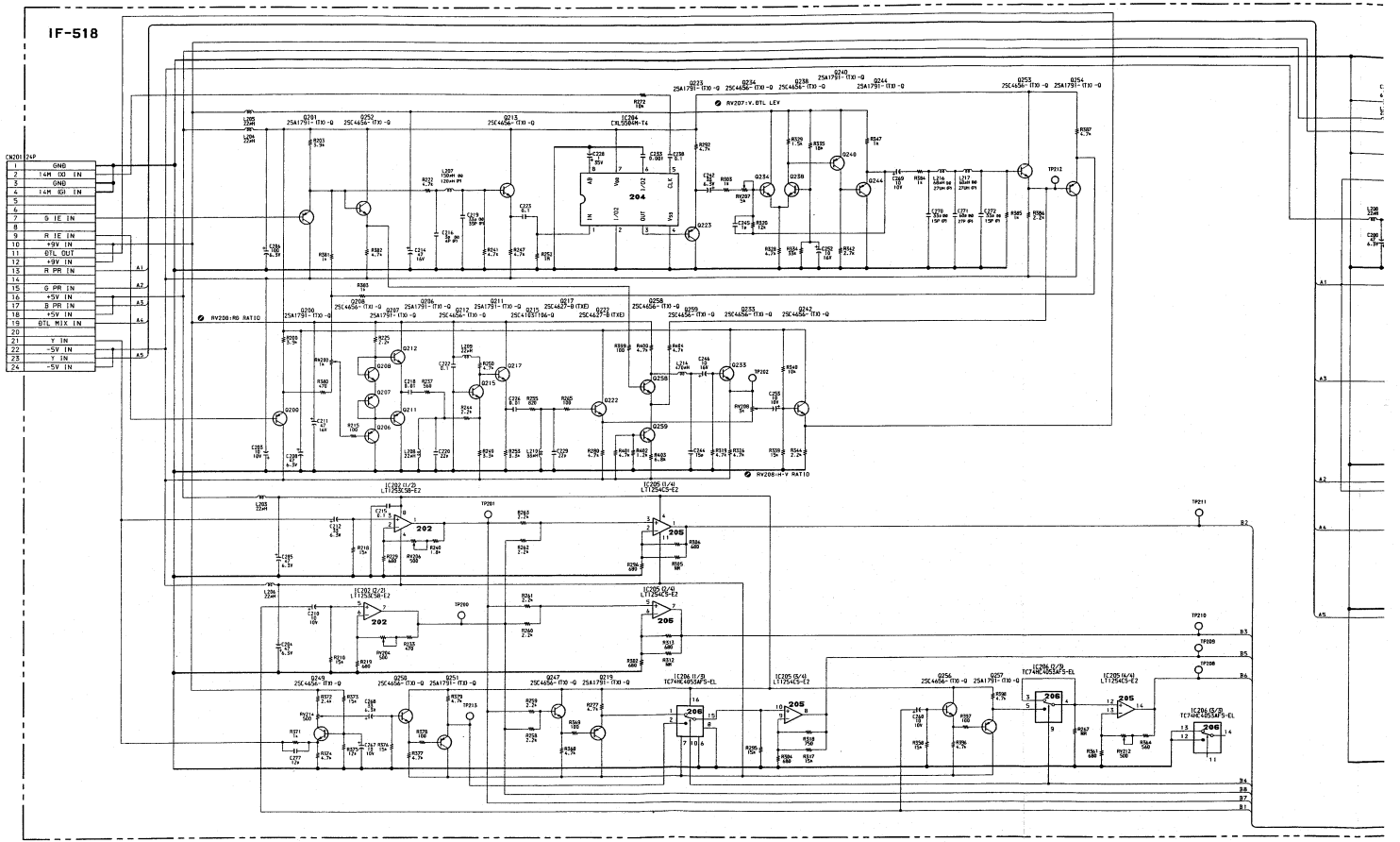
1-659-171-11 B SIDE

IF-518 (1-659-171-11)

*: B SIDE

IC200	A-3
*IC201	B-3
*IC202	A-3
*IC203	B-3
*IC204	A-1
*IC205	A-2
IC206	A-3
IC207	B-2
IC208	B-2
*IC209	B-3
*Q200	A-2
*Q201	A-1
Q202	B-2
*Q203	B-3
*Q204	B-2
Q205	B-2
*Q206	A-1
*Q207	A-1
*Q208	A-1
*Q209	B-2
Q210	B-2
*Q211	A-1
*Q212	A-1
*Q213	A-1
Q214	B-1
*Q215	A-1
Q216	B-2
*Q217	A-1
Q219	A-2
*Q222	A-1
*Q223	A-1
*Q224	B-3
*Q225	B-3
*Q228	B-3
*Q229	B-3
*Q230	B-2
*Q231	B-3
*Q232	B-1
*Q233	B-1
*Q234	A-1
*Q235	B-2
*Q236	B-3
*Q237	B-2
*Q238	B-1
*Q239	B-2
*Q240	B-1
Q241	B-1
Q242	A-1
*Q243	B-2
*Q244	B-1
Q245	B-1
Q247	A-2
*Q248	B-2
*Q249	A-3
Q250	A-2
Q251	A-2
Q252	A-1
*Q253	B-1
*Q254	B-1
*Q256	A-3
*Q257	A-3
*Q258	B-1
Q259	B-1

IF-518 BOARD

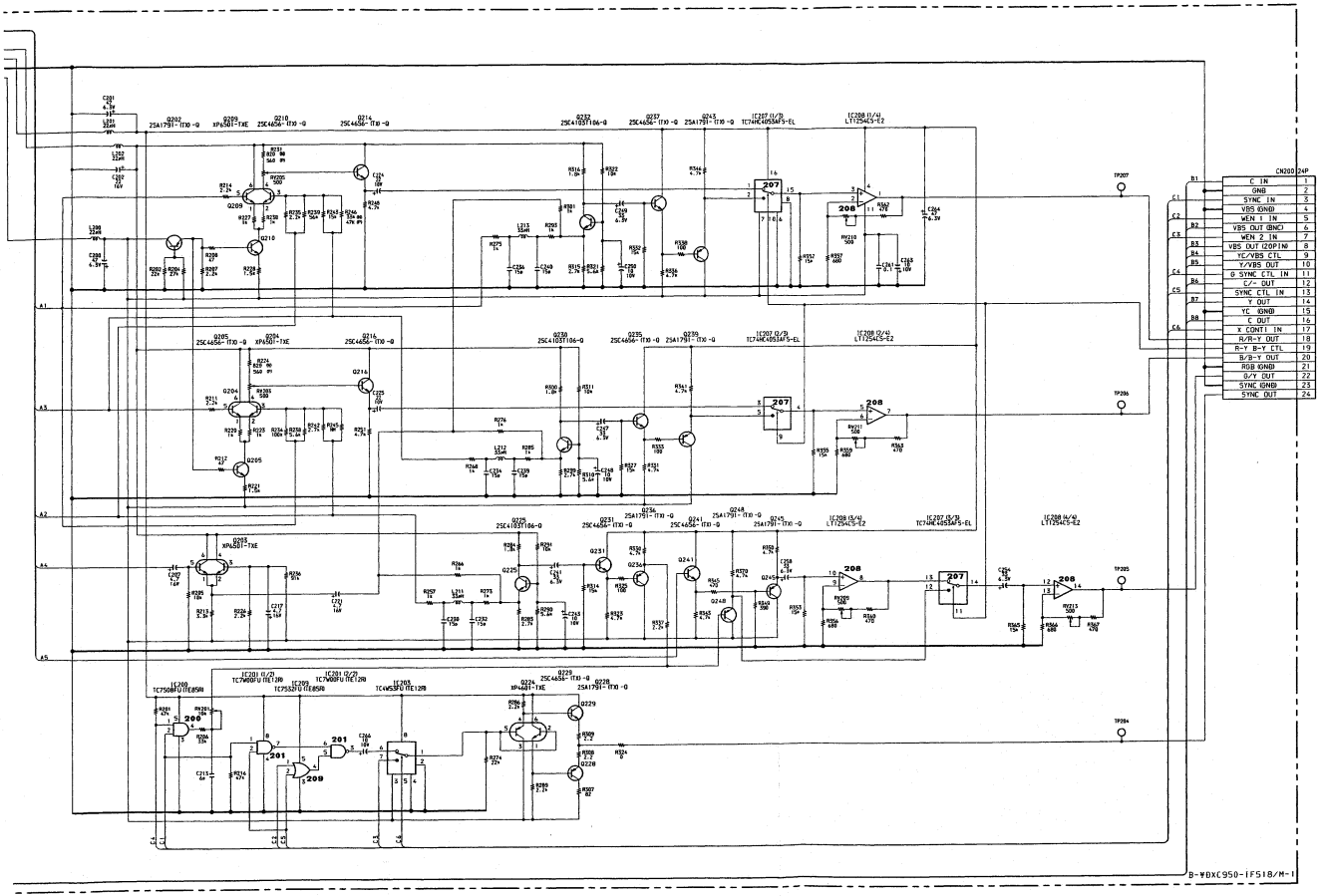


DXC-950/950P
DXC-970MD

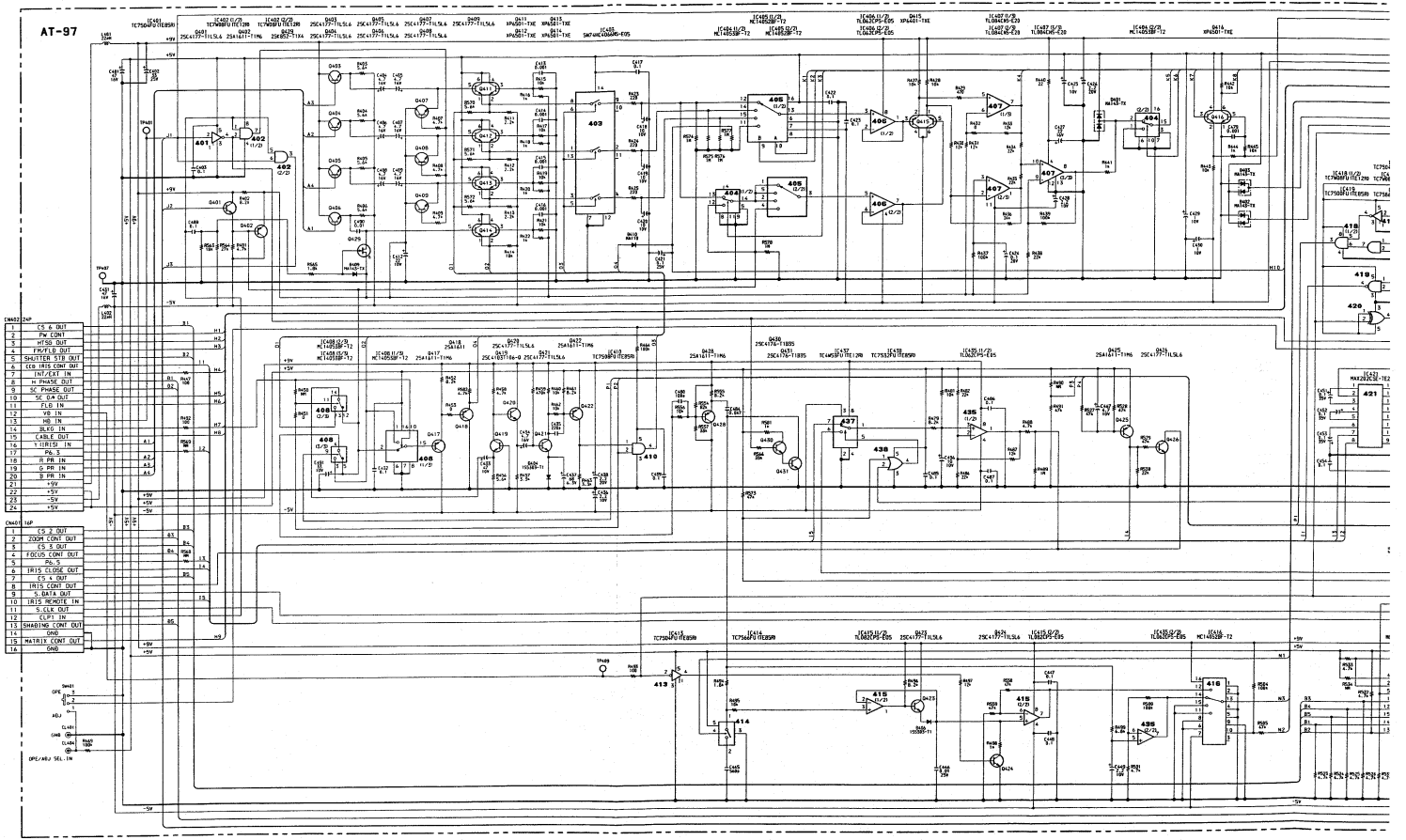
B - 7

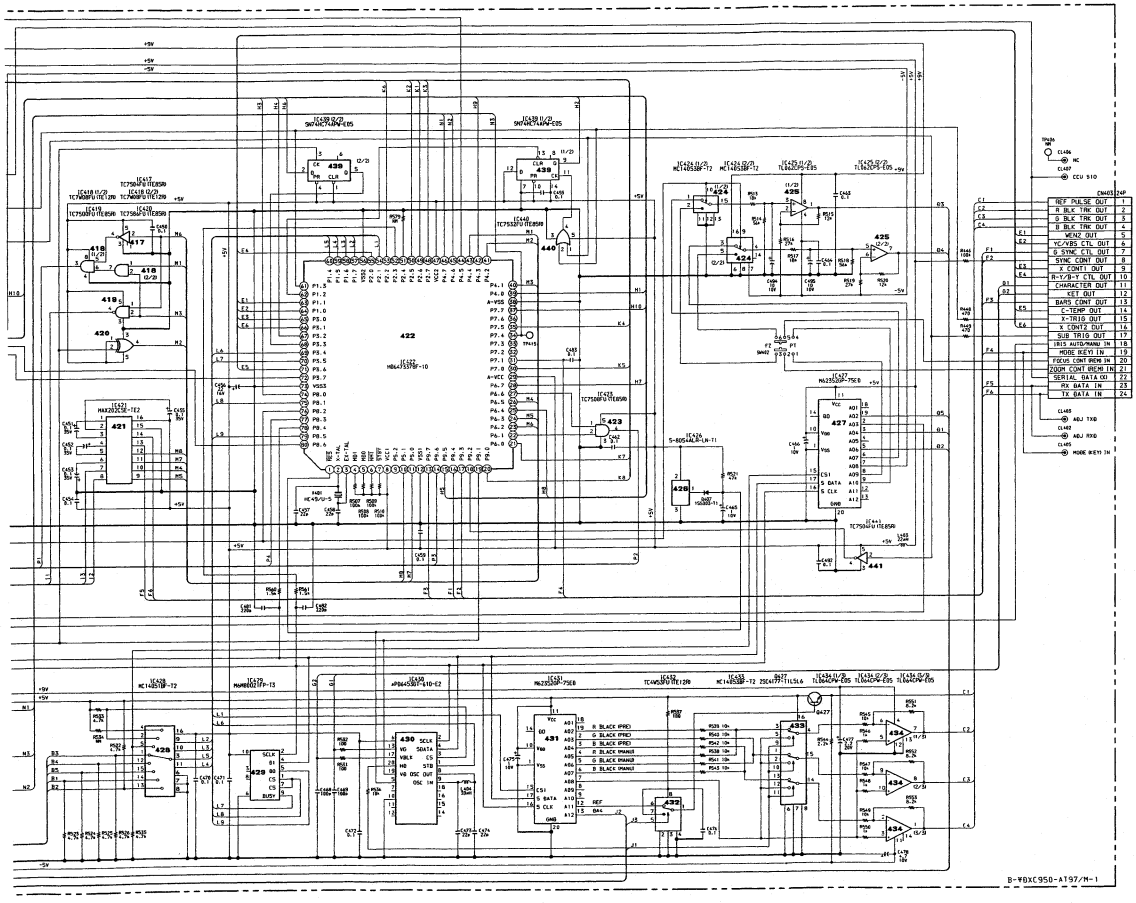
B - 7

A | B | C | D | E | F | G | H


CN200 24P
C IN 1
GND 2
SYNC IN 3
VBS IGND 4
WIN 1 IN 5
VBS OUT (BNC) 6
WIN 2 IN 7
VBS OUT (20PIN) 8
YC/VBS CTL 9
Y/VBS OUT 10
G SYNC CTL IN 11
C/- OUT 12
SYNC CTL IN 13
Y OUT 14
YC IGND 15
C OUT 16
X CONT1 IN 17
R/R-Y OUT 18
R-Y B-Y CTL 19
B/B-Y OUT 20
RGB IGND 21
G/Y OUT 22
SYNC IGND 23
SYNC OUT 24
TP207
TP206
TP205
TP204
B-WDXC950-IF518/M-1

AT-97 BOARD


AT-97
CN402 24P
1 CS 6 OUT
2 PW CONT
3 HTSD OUT
4 FH/FLD OUT
5 SHUTTER STB OUT
6 ICB IRIS CONT OUT
7 INT./EXT IN
8 H PHASE OUT
9 SC PHASE OUT
10 SC O.A OUT
11 FLD IN
12 VD IN
13 HD IN
14 BLKG IN
15 CABLE OUT
16 Y IRIS IN
17 P6.3
18 R PR IN
19 G PR IN
20 B PR IN
21 +9V
22 +5V
23 -5V
24 +5V
CN401 16P
1 CS 2 OUT
2 ZOOM CONT OUT
3 CS 3 OUT
4 FOCUS CONT OUT
5 P6.5
6 IRIS CLOSE OUT
7 CS 4 OUT
8 IRIS CONT OUT
9 S.DATA OUT
10 IRIS REMOTE IN
11 S.CLK OUT
12 CLP1 IN
13 SHABING CONT OUT
14 GND
15 MATRIX CONT OUT
16 GND
DPE/ADJ SEL-IN
B-8
B-8



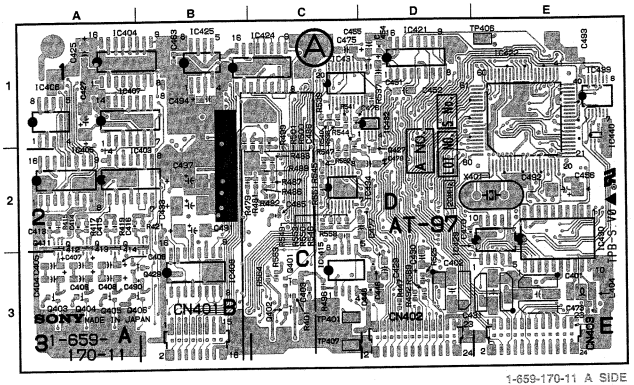
B - 8

B - 8

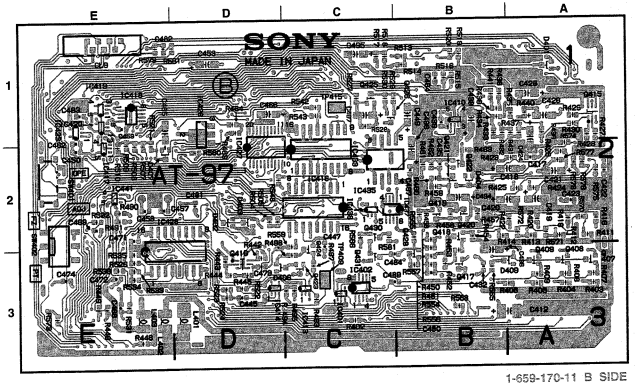
I J K L M N O P

DXC-950/950P
DXC-970MD

AT-97 BOARD



1-659-170-11 A SIDE



1-659-170-11 B SIDE

AT-97 (1-659-170-11)

* : B SIDE

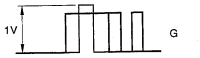
*D401	A-1
*D402	D-2
*D403	D-2
*D404	B-2
*D406	D-3
*D407	E-2
*D409	A-3
*IC401	C-3
*IC402	C-3
IC403	A-2
IC404	A-1
IC405	A-2
IC406	A-1
IC407	A-1
IC408	B-3
*IC410	B-1
*IC413	C-3
*IC414	D-3
IC415	C-3
*IC416	C-2
*IC417	E-2
*IC418	E-1
*IC419	E-1
*IC420	E-1
IC421	D-1
IC422	E-1
*IC423	E-1
IC424	C-1
IC425	B-1
*IC426	D-1
*IC427	D-2
*IC428	D-3
IC429	E-2
IC430	E-2
IC431	C-1
IC432	D-2
*IC433	C-2
IC434	C-2
*IC435	C-2
*IC437	C-2
*IC438	C-2
IC439	E-1
IC440	E-1
*IC441	E-2
Q401	C-3
Q402	C-3
Q403	A-3
Q404	A-3
Q405	A-3
Q406	A-3
*Q407	A-3
*Q408	A-3
*Q409	A-3
Q411	A-2
Q412	A-2
Q413	A-2
Q414	B-2
*Q415	A-1
*Q416	D-3
*Q417	B-3
*Q418	B-2
*Q419	B-2
*Q420	B-2
*Q421	B-2
*Q422	B-2
*Q423	C-3
*Q424	C-3
*Q425	C-1
*Q426	C-1
Q427	D-2
*Q428	B-3
Q429	A-3
*Q430	C-2
*Q431	C-3

AT-97 BOARD

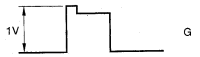
NOTE:

- BARS button → "BARS"
- Gain : Step, 0 dB
- C. Temp : 3200 K
- WHT. Bal : R paint, off
  B paint, off
- Shutter : off

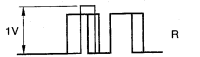
AT, 402-19 G PR (NTSC)



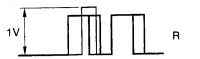
AT, 402-19 G PR (PAL)



AT, CN402-18 R PR (NTSC)



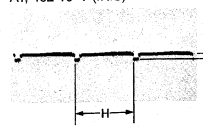
AT, CN402-18 R PR (PAL)



AT, CN402-20 B PR (NTSC)

AT, CN402-20 B PR (PAL)

AT, 402-16 Y (IRIS)



AT-97 (1-659-170-11)

*: B SIDE

*D401 A-1
*D402 D-2
*D403 D-2
*D404 B-2
*D406 D-3
*D407 E-2
*D409 A-3

*IC401 C-3
*IC402 C-3
IC403 A-2
IC404 A-1
IC405 A-2
IC406 A-1
IC407 A-1
IC408 B-3
*IC410 B-1
*IC413 C-3
*IC414 D-3
IC415 C-3
*IC416 C-2
*IC417 E-2
*IC418 E-1
*IC419 E-1
*IC420 E-1
IC421 D-1
IC422 E-1
*IC423 E-1
IC424 C-1
IC425 B-1
*IC426 D-1
*IC427 D-2
*IC428 D-3
IC429 E-2
IC430 E-2
IC431 C-1
IC432 D-2
*IC433 C-2
IC434 C-2
*IC435 C-2
*IC437 C-2
*IC438 C-2
IC439 E-1
IC440 E-1
*IC441 E-2

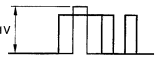
Q401 C-3
Q402 C-3
Q403 A-3
Q404 A-3
Q405 A-3
Q406 A-3
*Q407 A-3
*Q408 A-3
*Q409 A-3
Q411 A-2
Q412 A-2
Q413 A-2
Q414 B-2
*Q415 A-1
*Q416 D-3
*Q417 B-3
*Q418 B-2
*Q419 B-2
*Q420 B-2
*Q421 B-2
*Q422 B-2
*Q423 C-3
*Q424 C-3
*Q425 C-1
*Q426 C-1
Q427 D-2
*Q428 B-3
Q429 A-3
*Q430 C-2
*Q431 C-3

AT-97 BOARD

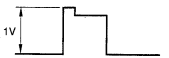
NOTE:

- BARS button → "BARS"
- Gain : Step, 0 dB
- C. Temp : 3200 K
- WHT. Bal : R paint, off
  B paint, off
- Shutter : off

AT, 402-19 G PR (NTSC)

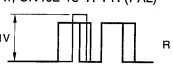


AT, 402-19 G PR (PAL)



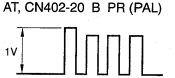
AT, CN402-18 R PR (NTSC)

AT, CN402-18 R PR (PAL)

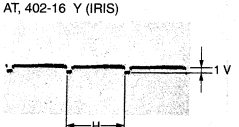


AT, CN402-20 B PR (NTSC)

AT, CN402-20 B PR (PAL)

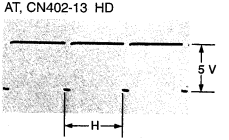


AT, 402-16 Y (IRIS)

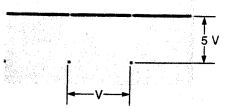


AT, CN401-12 CLP1

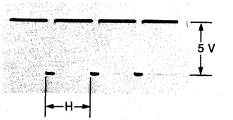
AT, CN402-13 HD



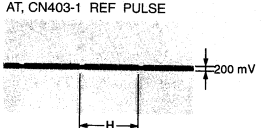
AT, CN402-12 VD



AT, CN402-14 BLKG



AT, CN403-1 REF PULSE

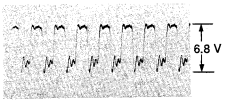


SG-236 BOARD

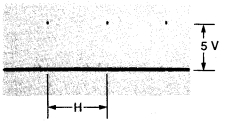
NOTE:

- BARS button → "BARS"
- Gain : Step, 0 dB
- C. Temp : 3200 K
- WHT. Bal : R paint, off
  B paint, off
- Shutter : off

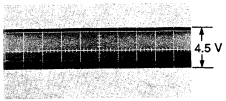
SG, CN1-22 14 MHz



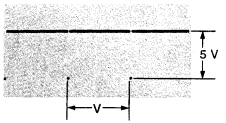
SG, CN1-18 CLP (AGC)



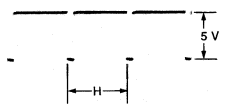
SG, CN1-19 28 MHz



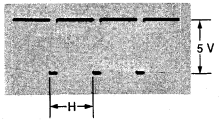
SG, CN1-9 VD



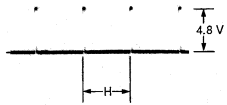
SG, CN1-7 HD



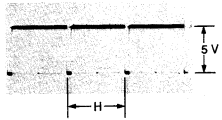
SG, CN1-5 BLKG



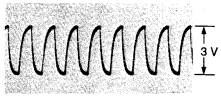
SG, CN1-8 BF



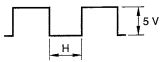
SG, CN1-16 SYNC



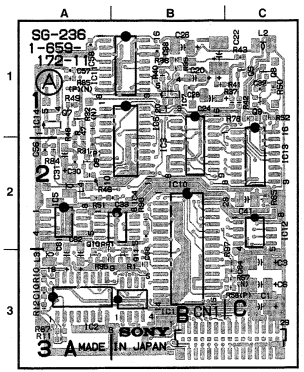
SG, CN1-14 SC



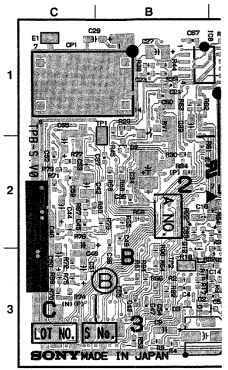
SG, CN1-10 FLD



SG-236 BOARD

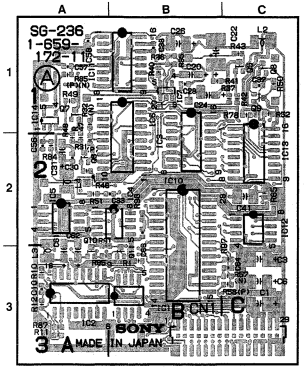


1-659-172-11 A SIDE

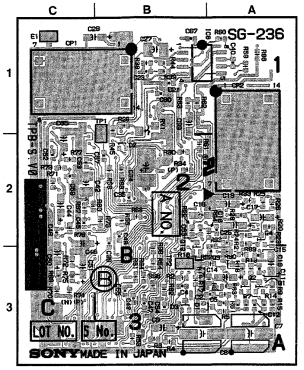


1-659-1

SG-236 BOARD



1-659-172-11 A SIDE



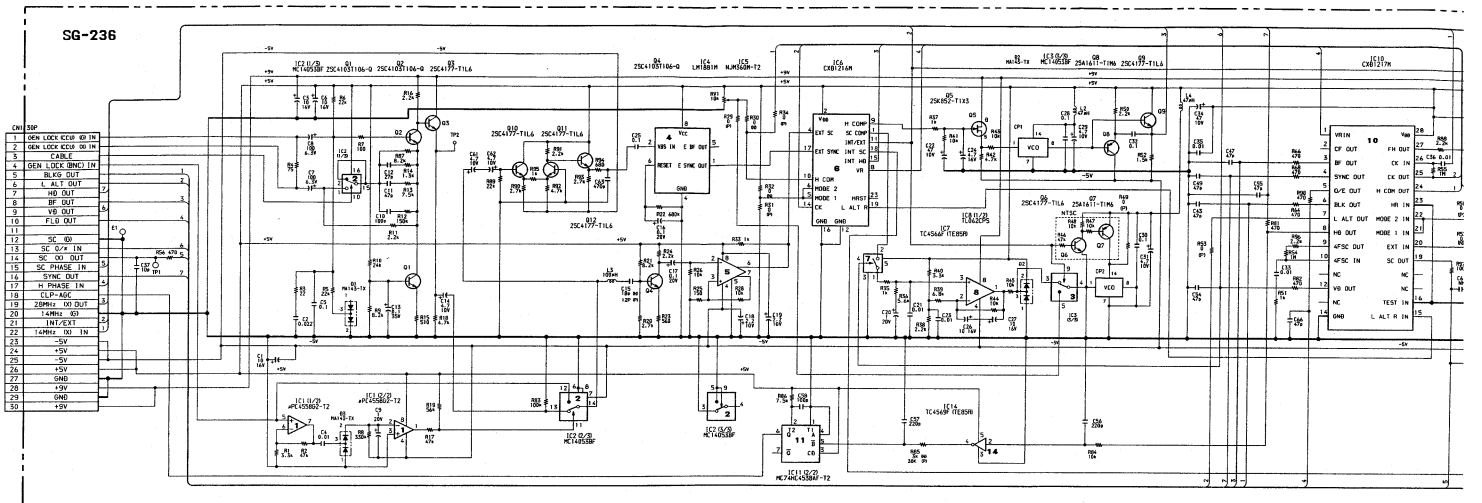
1-659-172-11 B SIDE

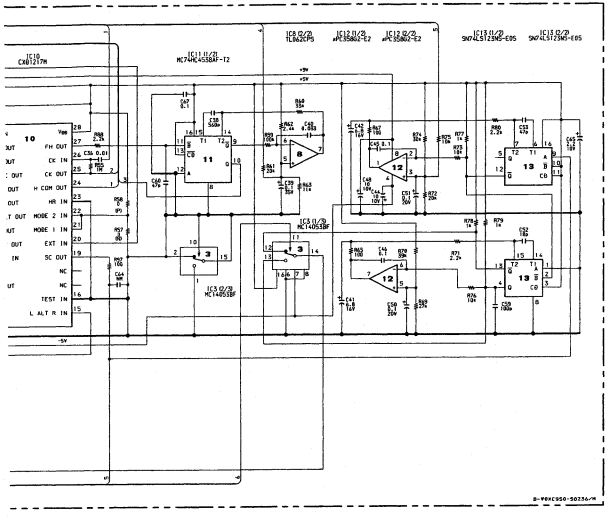
SG-236 (1-659-172-11)

* : B SIDE

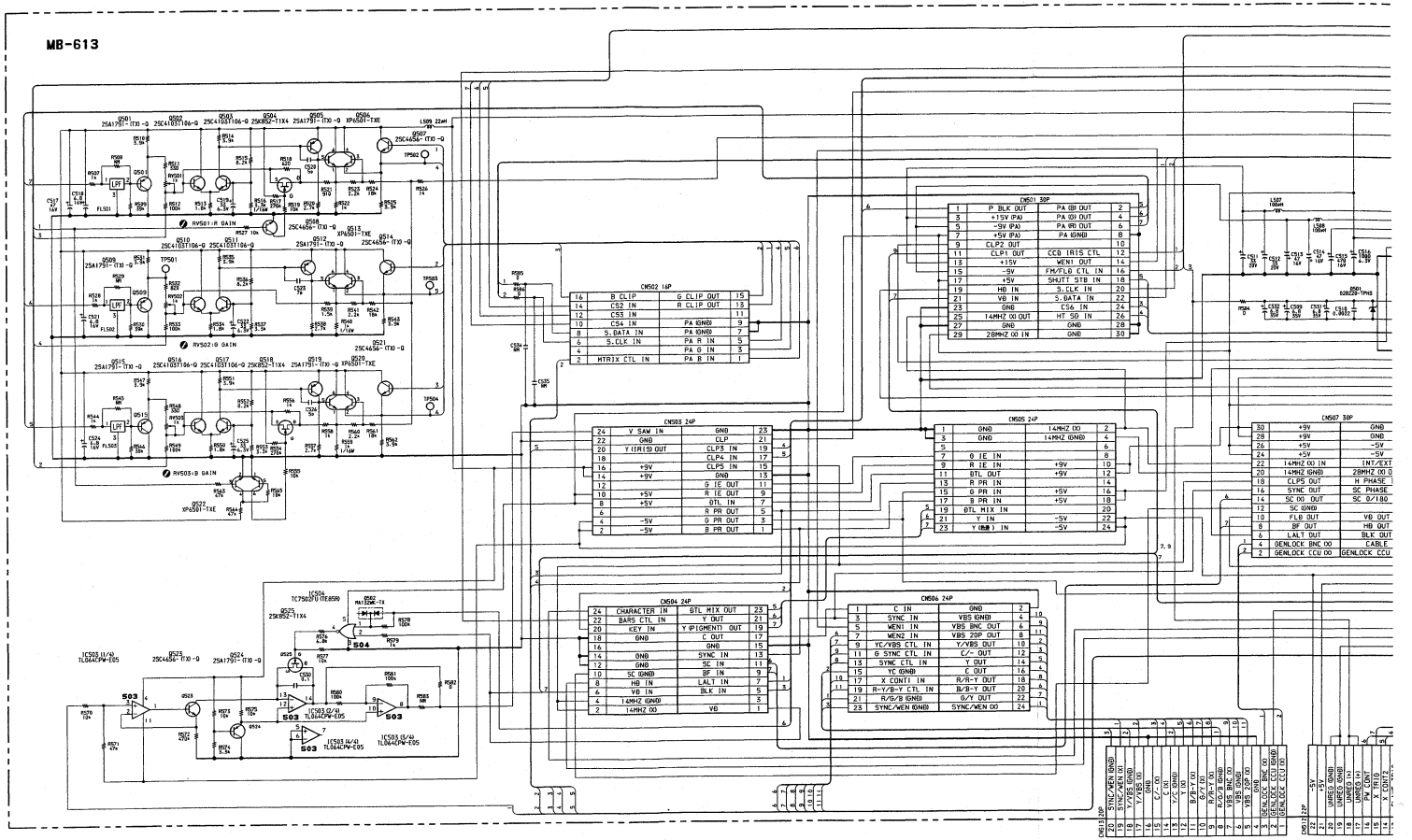
*D1	A-3
*D2	B-2
*D3	B-3
IC1	B-3
IC2	A-3
IC3	B-2
IC4	B-2
IC5	A-2
IC6	B-2
IC7	B-1
*IC8	B-1
IC10	B-2
IC11	B-1
IC12	C-2
IC13	C-2
IC14	A-1
*Q1	A-3
*Q2	A-3
*Q3	A-3
*Q4	A-2
Q5	C-1
Q6	A-2
Q7	A-1
Q8	C-1
Q9	C-1
Q10	A-3
Q11	B-3
*Q12	B-2

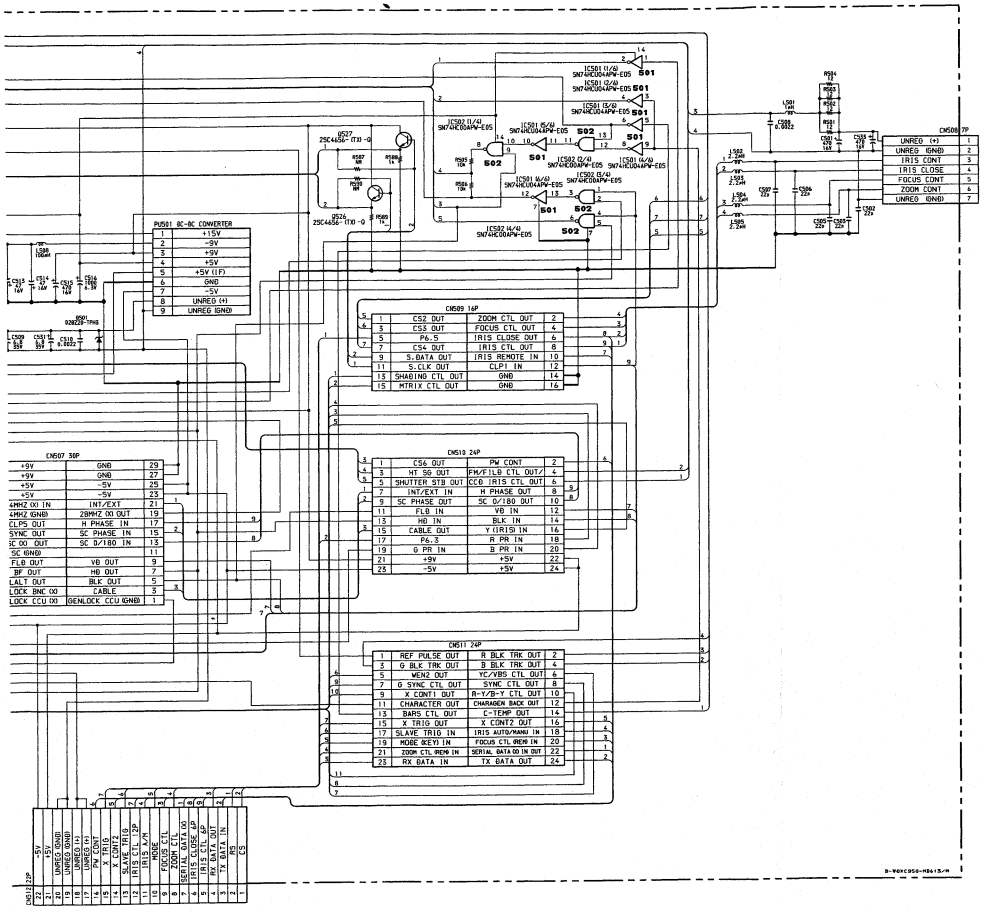
SG-236 BOARD


SG-236
CN130P
1 GEN LOCK KCO@ KO IN
2 GEN LOCK KCO@ OO IN
5 CABLE
4 GEN LOCK BNC) IN
5 BLKG OUT
6 L ALT OUT
7 HD OUT
8 BF OUT
9 VB OUT
10 FLD OUT
11
12 SC KO
13 SC O/+ IN
14 SC OO OUT
15 SC PHASE IN
16 SYNC OUT
17 H PHASE IN
18 CLP-AGC
19 28MHz OO OUT
20 14MHz KO
21 INT/EXT
22 14MHz OO IN
23 -5V
24 +5V
25 -5V
26 +5V
27 GND
28 +5V
29 GND
30 +5V

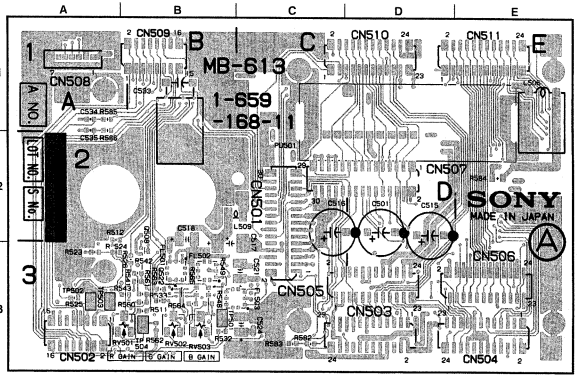


MB-613 BOARD


MB-613
CN501 30P
CN502 16P
CN503 24P
CN504 24P
CN505 24P
CN506 24P
CN507 30P
CN512 22P
CN513 22P


PU501 DC-DC CONVERTER
1 +15V
2 -9V
3 +9V
4 +5V
5 +5V (LF)
6 GND
7 -5V
8 UNREG (+)
9 UNREG (GND)
CN507 30P
+9V GND 29
+9V GND 27
+5V -5V 25
+5V -5V 23
4MHZ OSC IN INT/EXT 21
4MHZ (GND) 28MHZ OSC OUT 19
CLPS OUT H PHASE IN 17
SYNC OUT SC PHASE IN 15
SC OSC OUT SC D/180 IN 13
SC (GND) 11
FLD OUT VD OUT 9
BF OUT HD OUT 7
CALT OUT BLK OUT 5
LOCK BNC OUT CABLE 3
LOCK CCU OUT (GEN)LOCK CCU (GND) 1
CN509 16P
1 CS2 OUT ZOOM CTL OUT 2
3 CS3 OUT FOCUS CTL OUT 4
5 P6.5 IRIS CLOSE OUT 6
7 CS4 OUT IRIS CTL OUT 8
9 S.DATA OUT IRIS REMOTE IN 10
11 S.CLK OUT CLP1 IN 12
13 SHADING CTL OUT GND 14
15 MTRIX CTL OUT GND 16
CN510 24P
1 CS6 OUT PW CONT 2
3 HT SG OUT FH/FILB CTL OUT/ 4
5 SHUTTER STB OUT CC0 IRIS CTL OUT 6
7 INT/EXT IN H PHASE OUT 8
9 SC PHASE OUT SC D/180 OUT 10
11 FLD IN VD IN 12
13 HD IN BLK IN 14
15 CABLE OUT Y (IRIS) IN 16
17 P6.3 R PR IN 18
19 G PR IN B PR IN 20
21 +9V +5V 22
23 -5V +5V 24
CN511 24P
1 REF PULSE OUT R BLK TRK OUT 2
3 G BLK TRK OUT B BLK TRK OUT 4
5 WEN2 OUT YC/VBS CTL OUT 6
7 G SYNC CTL OUT SYNC CTL OUT 8
9 X CONT1 OUT R-Y/B-X CTL OUT 10
11 CHARACTER OUT CHARACTER BACK OUT 12
13 BARS CTL OUT C-TEMP OUT 14
15 X TRIG OUT X CONT2 OUT 16
17 SLAVE TRIG IN IRIS AUTO/MANU IN 18
19 MODE (KEY) IN FOCUS CTL REMO IN 20
21 ZOOM CTL REMO IN SERIAL DATA OO IN OUT 22
23 RX DATA IN TX DATA OUT 24
CN506 7P
UNREG (+) 1
UNREG (GND) 2
IRIS CONT 3
IRIS CLOSE 4
FOCUS CONT 5
ZOOM CONT 6
UNREG (GND) 7
CN512 22P
+5V 22
+5V 21
UNREG (GND) 20
UNREG (GND) 19
UNREG (+) 18
X TRIG 17
X CONT2 16
IRIS CTL 2P 15
IRIS X/M 14
MODE 13
FOCUS CTL 12
ZOOM CTL 11
SERIAL DATA I/O 10
IRIS CTL 4P 9
IRIS CTL 3P 8
RX DATA OUT 7
TX DATA IN 6
RES 5
CS 4

MB-613 BOARD

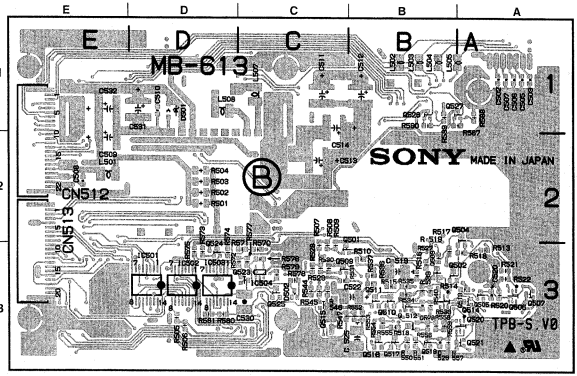


1-659-168-11 A SIDE

MB-613 (1-659-168-11)

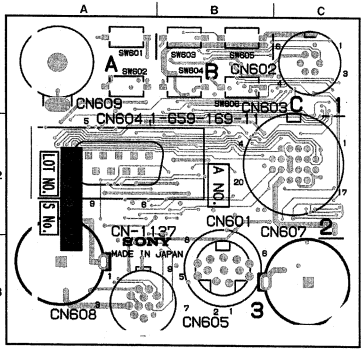
* : B SIDE

*D501	D-1	1
*D502	C-3	
*IC501	D-3	
*IC502	D-3	
*IC503	D-3	
*IC504	C-3	
*Q501	C-3	—
*Q502	B-3	
*Q503	B-3	
*Q504	A-2	
*Q505	A-3	
*Q506	A-3	
*Q507	A-3	
Q508	B-3	2
*Q509	C-3	
*Q510	B-3	
*Q511	B-3	
*Q512	B-3	
*Q513	B-3	
*Q514	A-3	
*Q515	C-3	
*Q516	B-3	
*Q517	B-3	—
*Q518	B-3	
*Q519	B-3	
*Q520	A-3	
*Q521	A-3	
Q522	B-3	
*Q523	C-3	
*Q524	D-3	
*Q525	C-3	3
*Q526	B-1	
*Q527	B-1	



1-659-168-11 B SIDE

CN-1137 BOARD



1-659-169-11 A SIDE

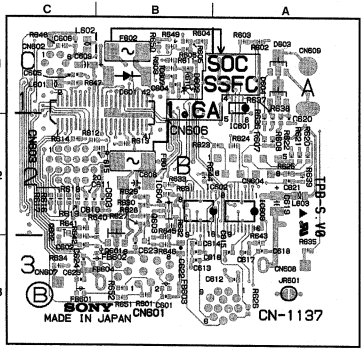
CN-1137 [1-659-169-11)

*: B SIDE

*D601 B-1
*D602 B-1
*D603 A-1
*D604 A-1

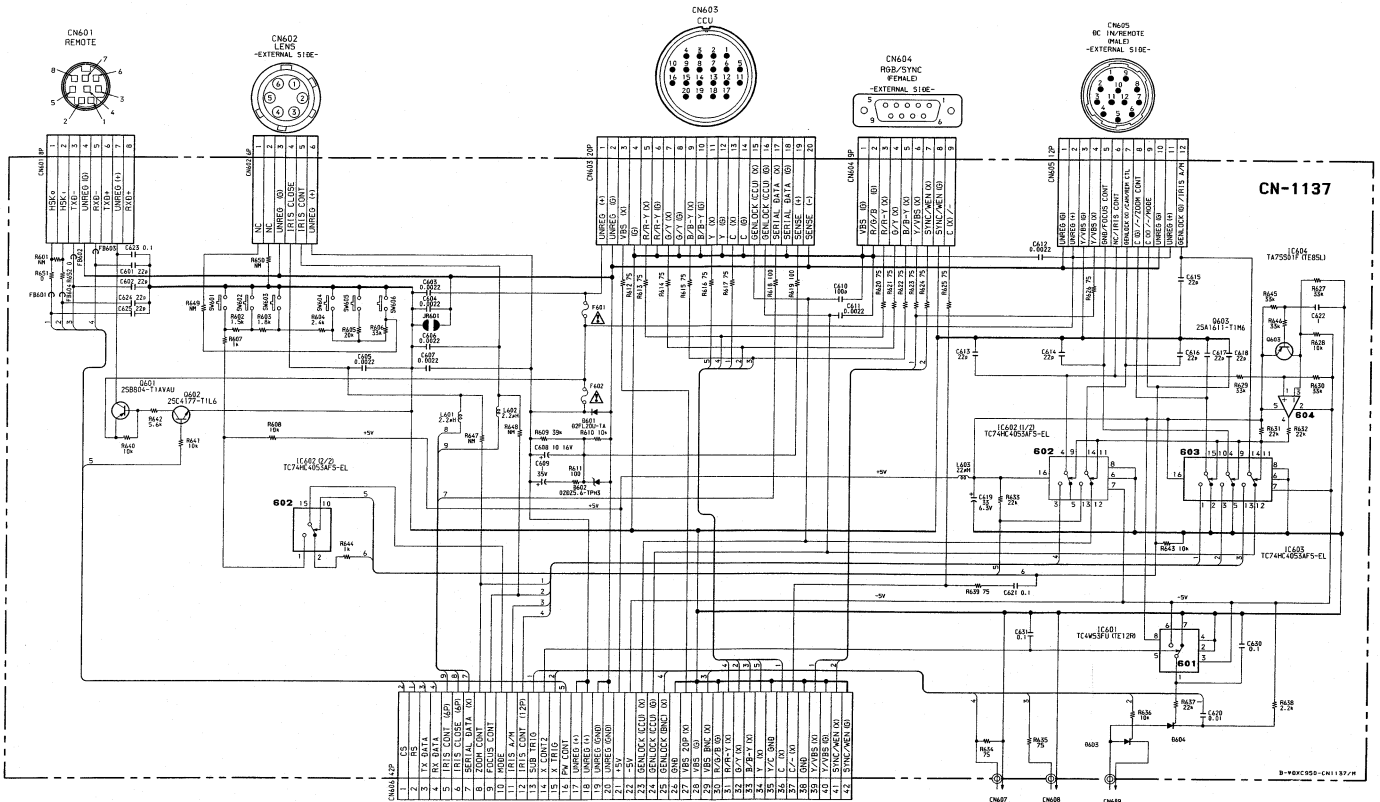
*IC601 A-1
*IC602 B-2
*IC603 A-2
*IC604 B-2

*Q601 B-2
*Q602 C-2
*Q603 B-3



1-659-169-11 B SIDE

CN-1137 BOARD

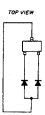


SECTION C
SEMICONDUCTOR

等価回路はICメーカーのData Bookに従いました。
The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

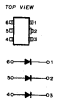
02DZ20
02DZ5.6

1SS226



1SS303

D2FL20



MA121

MA132WK

2SA1576
2SA1611

2SA1791

2SB804

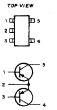
2SC3617

2SC4103
2SC4176-B35
2SC4177-L6

2SC4627
2SC4656

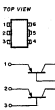
2SK663

2SK852



XP1401

XP4601



XP6401

XP6501

BA10358F (ROHM) FLAT PACKAGE

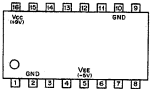
DUAL OPERATIONAL AMPLIFIERS

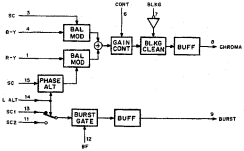
– TOP VIEW –

CX22017 (SONY)

VIDEO SIGNAL PROCESSOR

– TOP VIEW –

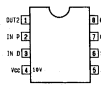


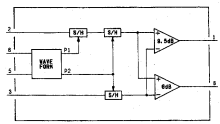


CXA1439M (SONY) FLAT PACKAGE

CORRELATED DOUBLE SAMPLING

– TOP VIEW –

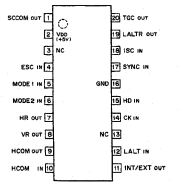




CXD1216M (SONY) FLAT PACKAGE

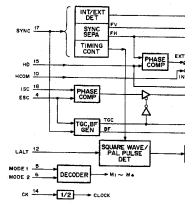
C-MOS GENLOCK DRIVER

– TOP VIEW –



INPUT		MODE	SYSTEM
MODE1	MODE2		
0	0	M1	PAL-VBS
1	0	M2	PALM-VBS
0	1	M3	PAL.SECAM-VSIS/CALT
1	1	M4	NTSC-VBS,NTSC-VSISC PALM-VSIS/CALT

0 ; LOW LEVEL
1 ; HIGH LEVEL



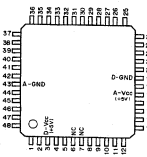
INPUT
CK : 4fsc CLOCK INPUT
ESC : SC/COLOR BURST
HCOM : PHASE COMPARATE FROM CXD1217
HD : H DRIVE FROM CXD1217
ISC : SUBCARRIER FROM CXD1217
LALT : LALT FROM REFERENCE SIGNAL GENERATOR
MODE1,2 : SYSTEM SELECT
SYNC : SYNC FROM REFERENCE SIGNAL GENERATOR

OUTPUT
HCOM : PHASE COMPARATOR HR WITH HD
HIR : fH OF SYNC SEPARATE
INT/EXT : INTERNAL/EXTERNAL SPECIFIED
LALTR : LINE CHANGE RESET
SCOM : PHASE COMPARATOR ESC WITH ISC
TGC : TRISTATE CONTROL
VR : fV OF SYNC SEPARATE

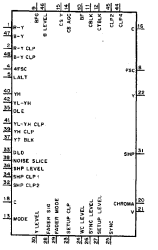
CXA1592R (SONY) FLAT PACKAGE

ENCODER FOR CCD COLOR CAMERA

– TOP VIEW –



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	R-Y	13	I	MODE	25	I	SYNC	37	I	YTSLK
2	I	R-Y CLP	14	I	CB AGC	26	I	SYNC LEVEL	38	I	NOISE SLICE
3	–	G-Vcc (+5V)	15	I	CSY	27	I	SETUP LEVEL	39	I	Y-YL CLP
4	I	4FSC	16	O	C	28	I	FADER SIG	40	I	YH
5	I	LALT	17	–	A-Vcc (+5V)	29	I	FADER MODE	41	I	YL-YH CLP
6	–	NC	18	I	C	30	I	Y LEVEL	42	I	YL-YH
7	–	NC	19	–	D-GND	31	O	SHP	43	–	A-GND
8	O	FSC	20	O	CHROMA	32	I	SHP CLP2	44	I	CLP4
9	I	BFG	21	O	V	33	I	DLD	45	I	CLP2
10	I	BF	22	O	Y	34	I	SHP CLP1	46	I	B LEVEL
11	I	CBLK	23	I	SETUP CLP	35	I	DLE	47	I	B-Y
12	I	CTBLK	24	I	WC LEVEL	36	I	SHP LEVEL	48	I	B-Y CLP

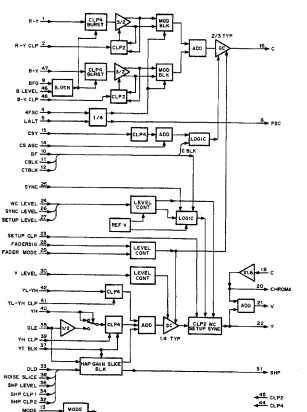


INPUT

4FSC	: 4FSC USED TO MAKE UP THE SUB CARRIER
B LEVEL	: CONTROLS THE BURST LEVEL
BF	: BURST FLAG PULSE
BFG	: INSERTS PULSE SLIGHT LARGER THAN BF ON BOTH ENDS
C	: INPUT FOR CHROMA SIGNAL PASSED THROUGH BPF
CBLK	: COMPOSITE BLANKING PULSE
CLP2, 4	: CLAMP2, 4 PULSE INPUT
CB AGC	: SUPPRESS CHROMA SIGNAL AT THE AGC GAIN CONTROL SIGNAL
CSY	: SUPPRESS CHROMA SIGNAL AT THE Y SIGNAL
CTBLK	: CHROMA TITLER PULSE
DLD	: CONNECTS THE DELAY LINE DRIVE SIDE OF THE APERTURE SIGNAL
DLE	: CONNECTS THE DELAY LINE END SIDE OF THE APERTURE SIGNAL
FADER MODE	: BLACK FADER AND WHITE FADER MODE SELECT
FADER SIG	: CONTROLS THE SIGNAL SUPPRESS LEVEL DURING BLACK FADER, CONTROLS THE SIGNAL SUPPRESS LEVEL DURING WHITE FADER AND AT THE SAME TIME SETS THE SET UP LEVEL
LALT	: INPUT FOR LINE ALTERNATE SIGNAL DURING PAL MODE
MODE	: SELECTS NTSC, PAL OR NTSC 4.2, PAL 4.2 MODES
NOISE SLICE	: CONTROLS THE SLICE LEVEL OF THE APERTURE SIGNAL
R-Y, B-Y	: R-Y, B-Y SIGNAL INPUT
R-Y, B-Y CLP	: CONNECTING THE CAPACITOR FOR R-Y, B-Y MODULATOR CLAMP
SETUP CLP	: CONNECTING FOR THE WHITE CLP CLAMP CAPACITOR
SETUP LEVEL	: SET UP LEVEL CONTROL
SHP CLP1, 2	: CONNECTS THE CLAMP CAPACITOR USED FOR THE SLICE OF THE APERTURE SIGNAL
SHP LEVEL	: CONTROL OF THE APERTURE SIGNAL LEVEL
SYNC	: SYNC PULSE
SYNC LEVEL	: SYNC LEVEL CONTROL
WC LEVEL	: WHITE CLIP LEVEL CONTROL
Y LEVEL	: Y SIGNAL LEVEL CONTROL
YH	: YH SIGNAL
YH CLP	: CONNECTS THE CAPACITOR FOR YH INPUT CLAMP
YL-YH	: V APERTURE SIGNALS, TITLER SIGNALS AND YL-YH SIGNALS
YL-YH CLP	: CONNECTS THE CAPACITOR FOR YL-YH INPUT CLAMP
YTBLK	: Y TITLER PULSE

OUTPUT

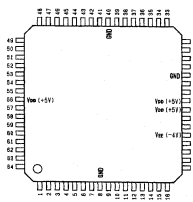
C	: CHROMA SIGNAL OUTPUT
CHROMA	: CHROMA SIGNAL OUTPUT WHEN USED FOR Y/C SEPARATION OUTPUT
FSC	: OUTPUTS A SUB CARRIER WITH THE SAME PHASE AS B-Y
SHP	: APERTURE SIGNAL
V	: COMPOSITE VIDEO SIGNAL
Y	: Y SIGNAL OUTPUT WHEN USED FOR Y/C SEPARATION OUTPUT



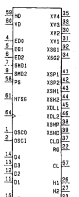
CXD1256AR (SONY) FLAT PACKAGE

TIMING GENERATOR FOR CCD CAMERA

– TOP VIEW –



Pin No.	I/O	SYMBOL	Pin No.	I/O	SYMBOL	Pin No.	I/O	SYMBOL	Pin No.	I/O	SYMBOL
1	O	OSCO	13	O	A3	25	O	XV3	49	I/O	CLP2
2	I	OSCI	18	O	A0	34	O	XSG2	50	I/O	CLP3
3	I	EF	19	O	A1	35	O	XV4	51	O	CLP4
4	I	ED0	20	O	A2	36	I	YSG2	52	O	PBLK
5	I	ED1	21	–	Vss	37	O	CLD	53	O	ID
6	I	ED2	22	O	SO	38	O	XSHP	54	O	WEN
7	I	SMD1	23	–	LH1	39	O	XSHD	55	I	SM
8	–	GND	24	–	Vee	40	–	GND	56	–	Vee
9	I	SMD2	25	–	Vee	41	O	XSP1	57	O	CL
10	O	XVCT	26	O	H1	42	O	XSP2	58	I	PS
11	I	D1	27	O	H2	43	O	XSH1	59	I	H2
12	I	D2	28	–	GND	44	O	XSH2	60	I	VD
13	I	D3	29	O	XSUB	45	O	XRL1	61	I	HTSG
14	I	D4	30	O	XV2	46	O	XRL2	62	I	TEST
15	O	A5	31	O	XV1	47	O	XFG	63	O	XCK
16	O	A4	32	O	XSG1	48	O	CLP1	64	I	CK



INPUT

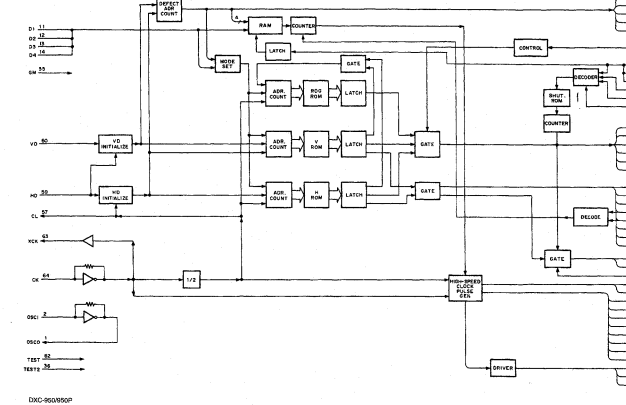
CK	: 8fsc CLOCK
D1	: WHEN EXTERNAL ROM IS USED, DATA INPUT. WHEN NOT USED, L ; NO ERROR COMPENSATION
D2	: WHEN EXTERNAL ROM IS USED, DATA INPUT. WHEN NOT USED, L ; COLOR H ; B/W
D3	: WHEN EXTERNAL ROM IS USED, DATA INPUT. WHEN NOT USED, FIXED L LOW
D4	: WHEN EXTERNAL ROM IS USED, DATA INPUT. WHEN NOT USED, FIXED L LOW
ED0	: SHUTTER SPEED SET, WHEN SERIAL MODE, STROBE INPUT.
ED1	: SHUTTER SPEED SET, WHEN SERIAL MODE, CLOCK INPUT.
ED2	: SHUTTER SPEED SET, WHEN SERIAL MODE, DATA INPUT.
EF	: DATA INPUT METHOD CHANGE FOR ERROR COMPENSATION H ; EXTERNAL ROM USED L ; SERIAL INPUT FROM MICROPROCESSOR
GM	: L ; FOR ANALOG SIGNAL, H ; FOR DIGITAL SIGNAL
HD	: HORIZONTAL DRIVE
HTSG	: XSG1, XSG2 CONTROL H ; XSG1 AND 2 GENERATED L ; XSG1 AND 2 STOPPED
OSCI	: INVERTION INPUT FOR OSCILLATION
PS	: ELECTRONIC SHUTTER SPEED INPUT METHOD CHANGE H ; PARALLEL INPUT L ; SERIAL INPUT
SMD1, SMD2	: SHUTTER MODE SET
TEST, TEST2	: FOR TEST (NORMALLY Low)
VD	: VERTICAL DRIVE

OUTPUT

A5-A0	: ADDRESS FOR EXTERNAL ROM
BFG	: PULSE FOR ENCODER ; CHROMA MODULATOR WHEN GM = H, ERROR POSITION SPECIFING PULSE
CL	: 4fsc CLOCK
CLD	: 4fsc CLOCK
CLP1, CLP4	: PULSE FOR CLAMP
H1, H2	: CLOCK FOR CCD HORIZONTAL REGISTER DRIVE
ID	: LINE IDENTIFICATION
OSCO	: INVERTER OUTPUT FOR OSCILLATION
PBLK	: BLANKING PULSE
RG	: RESET GATE PULSE
WEN	: WRITE ENABLE (ONLY WHEN LOW SHUTTER SPEED)
XCK	: 8fsc CLOCK
XDL1, XDL2	: CLOCK FOR DELAY LINE
XSG1, XSG2	: CCD ; ELECTRIC CHARGE READ OUT PULSE
XSH1, XSH2	: SWITCHING SAMPLE HOLD PULSE
XSHD	: PULSE FOR DATA SAMPLE HOLD
XSHP	: PRECHARGE LEVEL SAMPLE HOLD PULSE
XSP1, XSP2	: CHROMA SEPARATION SAMPLE HOLD PULSE
XSUB	: ELECTRIC CHARGE DISCHARGING PULSE
XV1-XV4	: VERTICAL SCANNING CLOCK
XVCT	: POWER CONTROL FOR EXTERNAL ROM

INPUT/OUTPUT

CLP2, CLP3 : PULSE FOR CLAMP; WHEN GM = H, STANDBY MODE SWITCHING INPUT

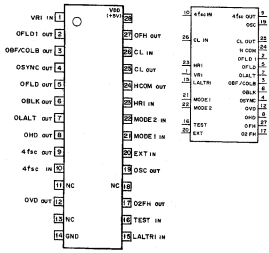


DXC-950/950P
DXC-970MD

CXD1217M (SONY) FLAT PACKAGE

C-MOS SYNC GENERATOR

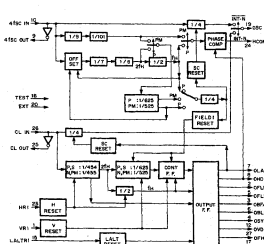
– TOP VIEW –



SYSTEM	4fsc	CLOCK
NTSC	910fH	910fH
PAL	1135fH+25	909fH
PALM	909fH	910fH
SECAM	—	909fH

INPUT MODE1	INPUT MODE2	SYSTEM
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

0 : LOW LEVEL
1 : HIGH LEVEL



N : NTSC
P : PAL
PM : PALM
S : SECAM

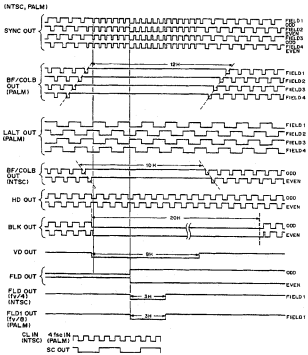
INPUT

4fSC IN : 4fSC INPUT
CL IN : CLOCK INPUT
EXT : SYNC MODE SELECT
(L : INTERNAL, H : EXTERNAL)
HRI : H RESET
LALTRI : LINE CHANGE RESET
MODE 1,2 : SYSTEM SELECT
VRI : V RESET

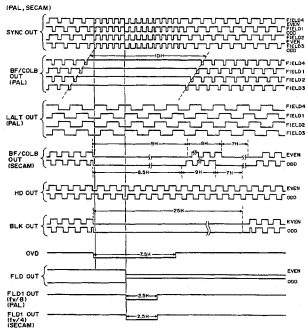
OUT PUT

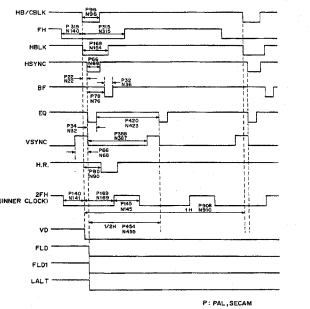
4fSC OUT : 4fSC OUTPUT
CL OUT : CLOCK OUTPUT
HCOM : PHASE COMPARATOR
OZFH : 2FH OUTPUT
OBF/COLB : BURST FLAG/COLOR BLANKING
OBLK : COMPOSITE BLANKING
OFH : H FREQUENCE
OFLD : EVEN, ODD
OFLD1 : FIELD1
OHD : H DRIVE
OLALT : LINE CHANGE
OSC : SUBCARRIER
OSYNC : COMPOSITE SYNC
OVD : V DRIVE

(NTSC, PALM)



(PAL, SECAM)

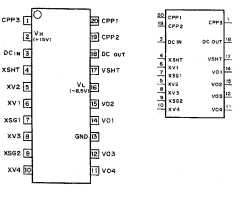




CXD1267AN (SONY) FLAT PACKAGE

C-MOS VERTICAL CLOCK DRIVER FOR CCD

– TOP VIEW –



INPUT

DCIN : OPERATIONAL AMPLIFIRE INPUT
XSG1, XSG2: SENSOR GATE PULSE INPUT
XSHT : SAMPLE AND HOLD PULSE INPUT
XV1 – XV4 : VERTICAL REGISTER TRANSMISSION CLOCK INPUT

OUTPUT

CPPO : CHARGE PUMP
DCOUT : OPERATIONAL AMPLIFIRE OUTPUT
VSHT : SAMPLE AND HOLD PULSE OUTPUT
VO1 – VO4 : VERTICAL REGISTER TRANSMISSION CLOCK OUTPUT

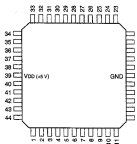
INPUT				OUTPUT		
XV1, 3	XSG1, 2	XV2, 4	XSHT	VO1, 3	VO2, 4	VSHT
0	0	X	X	Z	X	X
1	0	X	X	Z	X	X
0	1	X	X	GND	X	X
1	1	X	X	Z	X	X
X	X	0	X	X	GND	X
X	X	1	X	X	Z	X
X	X	X	0	X	X	Z
X	X	X	1	X	Z	Z

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE
Z : HIGH IMPEDANCE

CXD8924Q

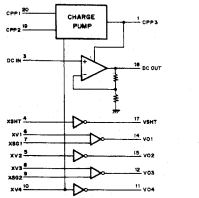
C-MOS GATE ARRAY

– TOP VIEW –



(VDD = +5 V)

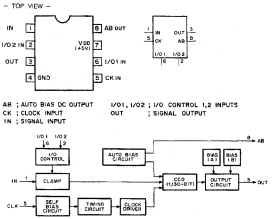
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	SAF	12	I	XCD2	23	I	VBLI9	34	O	R
2	I	9080	13	I	XCD1	24	I	VBLI0	35	O	G
3	I	CENT	14	I	XCD0	25	O	BLKG	36	O	B
4	O	MARK	15	O	BFO	26	I	XHB3	37	I	SNSE
5	I	TEST	16	O	SYNCO	27	I	XHB2	38	O	CLP
6	O	ZIPI	17	—	GND	28	I	XHB1	39	—	VDD
7	I	ZSRE	18	I	CLK	29	I	XHB0	40	O	NSU
8	O	PBLK	19	O	CLKO	30	O	I	41	O	PSU
9	O	VSAMP	20	I	NP	31	O	Q	42	I	BARE
10	I	BF	21	I	HD	32	O	Y1	43	I	TSAWE
11	I	SYNC	22	I	VD	33	O	Y2	44	O	TSAW



CXL5504M (SONY)

C-MOS CCD 1H DELAY LINE

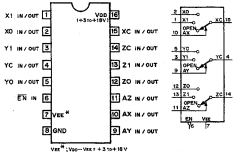
– TOP VIEW –



HD14053BFP (HITACHI) FLAT PACKAGE

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS

– TOP VIEW –



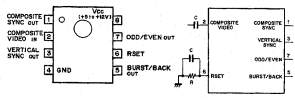
CONT. INPUTS		ON CHANNEL
EN	A (X, Y, Z)	
0	0	0
0	1	1
1	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE.

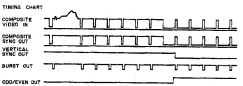
LM1881M (NS) FLAT PACKAGE

VIDEO SYNC SEPARATOR

– TOP VIEW –



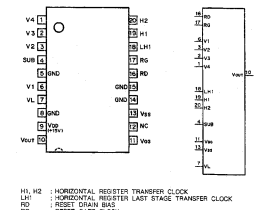
TIMING CHART



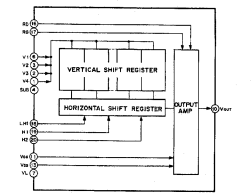
ICX038DLA (SONY) (NTSC, MONOCHROME)
ICX039DLA (SONY) (PAL, MONOCHROME)

1/2-INCH CCD IMAGE BLACK

– BOTTOM VIEW –



H1, H2 ; HORIZONTAL REGISTER TRANSFER CLOCK
LH1 ; HORIZONTAL REGISTER LAST STAGE TRANSFER CLOCK
RD ; RESET DRAIN BIAS
RG ; RESET GATE CLOCK
SUB ; OVERFLOW DRAIN
VDD ; OUTPUT AMP GATE BIAS
VL ; PROTECTION TRANSISTOR BIAS
VSS ; OUTPUT AMP SOURCE
V1 ~ V4 ; VERTICAL REGISTER TRANSFER CLOCK
VOUT ; SIGNAL OUTPUT



LT1253CS8 (LINEAR TECHNOLOGY) FLAT PACKAGE

DUAL AND QUAD VIDEO AMPLIFIERS

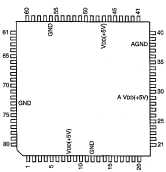
– TOP VIEW –

	V_+	V_-
SINGLE SUPPLY	+4 to +28V	GND
SPLIT SUPPLIES	+2 to +14V	– 2 to – 14V

HD6473378F (HITACHI)

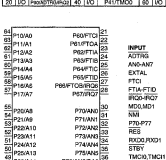
C-MOS 8-BIT SIGNAL CHIP MICRO COMPUTER

—TOP VIEW—



(Vcc = +5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	RES	21	I/O	P60/FTC0	41	I/O	P45/TMR0	61	I/O	P13/A3
2	I	XTAL	22	I/O	P61/FTC0A	42	I/O	P43/TMO1	62	I/O	P12/A2
3	I	EXTAL	23	I/O	P62/FTIA	43	I/O	P44/TMO1	63	I/O	P11/A1
4	I	MD1	24	I/O	P63/FTI0	44	I/O	P45/TMR1	64	I/O	P10/A0
5	I	MD2	25	I/O	P64/FTI0	45	I/O	P46/PW0	65	I/O	P35/D0
6	I	NMI	26	I/O	P65/FTI0	46	I/O	P47/PW1	66	I/O	P31/D1
7	I	STBY	27	I/O	P66/FTI0B	47	—	Vss	67	I/O	P32/D2
8	—	Vcc	28	I/O	P67/FTI0	48	I/O	P27/A15	68	I/O	P33/D3
9	I/O	P52/SCK0	29	—	AVcc	49	I/O	P26/A14	69	I/O	P34/D4
10	I/O	P51/RXD0	30	I/O	P70/AN0	50	I/O	P25/A13	70	I/O	P35/D5
11	I/O	P50/TXD0	31	I/O	P71/AN1	51	I/O	P24/A12	71	I/O	P36/D6
12	—	GND	32	I	P72/AN2	52	I/O	P23/A11	72	I/O	P37/D7
13	I/O	P57/WAIT	33	I	P73/AN3	53	I/O	P22/A10	73	—	GND
14	I/O	P56/	34	I	P74/AN4	54	I/O	P21/A9	74	I/O	P80
15	I/O	P55/AS	35	I	P75/AN5	55	I/O	P20/A8	75	I/O	P81
16	I/O	P54/WR	36	I	P76/AN6/DA0	56	—	GND	76	I/O	P82
17	I/O	P53/RD	37	I	P77/AN7/DA1	57	I/O	P17/A7	77	I/O	P83
18	I/O	P50/TRGI	38	—	AGND	58	I/O	P16/A6	78	I/O	P84/TXD1/SDA1
19	I/O	P91/IRQ1	39	I/O	P40/TMO0	59	I/O	P15/A5	79	I/O	P85/RXD1/IRQ4
20	I/O	P90/ADTRG/IRQ0	40	I/O	P41/TMO0	60	I/O	P14/A4	80	I/O	P86/SCK1/IRQ5



INPUT

ADTRG	;	A/D CONVERTER EXTERNAL TRIGGER
AN0-AN7	;	ANALOG
EXTAL	;	CRYSTAL OSCILLATOR
FTCI	;	FRT COUNTER CLOCK
FTIA-FTI0	;	FRT INPUT CAPTURE
IRQ0-IRQ7	;	INTERRUPT REQUEST
MD1,MD1	;	MODE
NMI	;	NON-MASKABLE INTERRUPT
P70-P77	;	PORT 7
RES	;	RESET
RXD0,RXD1	;	RECEIVE DATA
STBY	;	STANDBY
TMCI0,TMCI1	;	8-BIT TIMER CLOCK
TMRI0,TMRI1	;	8-BIT TIMER COUNTER RESET
WAIT	;	WAIT
XTAL	;	CRYSTAL OSCILLATOR
ϕ	;	SYSTEM CLOCK

OUTPUT

A0-A15	;	ADDRESS BUS
AS	;	ADDRESS STROBE
DA0,DA1	;	ANALOG
FTOA,FTOB	;	FRT OUTPUT COMPERE
PW0,PW1	;	PWM TIMER
RD	;	READ
TMO0,TMO1	;	8-BIT TIMER
TXD0,TXD1	;	TRANSCEIVER DATA
WR	;	WRITE

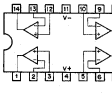
INPUT/OUTPUT

D0-D7	;	DATA BUS
P10-P17	;	PORT 1
P20-P27	;	PORT 2
P30-P37	;	PORT 3
P40-P47	;	PORT 4
P50-P52	;	PORT 5
P60-P67	;	PORT 6
P80-P86	;	PORT 8
P90-P97	;	PORT 9
SCK0,SCK1	;	SERIAL CLOCK

LT1254CS (LINEAR TECHNOLOGY) FLAT PACKAGE

DUAL AND QUAD VIDEO AMPLIFIERS

– TOP VIEW –

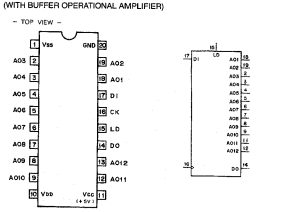


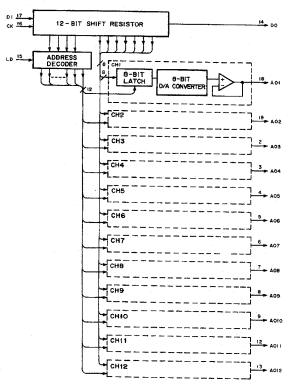
	V+	V –
SINGLE SUPPLY	+4 to +28V	GND
SPLIT SUPPLIES	+2 to +14V	– 2 to – 14V

DXC-950/950P
DXC-970MD

M62352GP (MITSUBISHI) FLAT PACKAGE

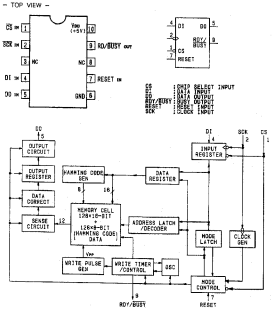
C-MOS 8-BITx12 CHANNEL D/A CONVERTER
(WITH BUFFER OPERATIONAL AMPLIFIER)





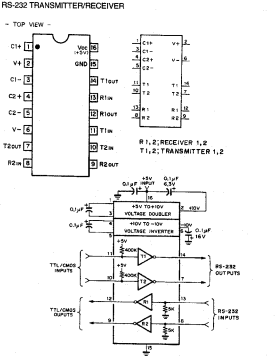
M6M80021FP (MITSUBISHI) FLAT PACKAGE

C-MOS 2k (128x16) BIT ERASABLE PROM



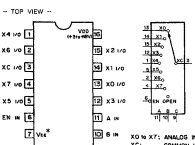
MAX202CSE (MAXIM)

RS-232 TRANSMITTER/RECEIVER



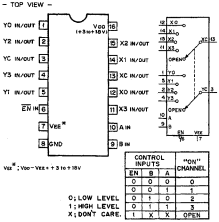
MC14051BF (MOTOROLA) FLAT PACKAGE

C-MOS 8-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER



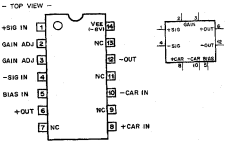
MC14052BF (MOTOROLA) FLAT PACKAGE

C-MOS DUAL 4-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS



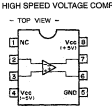
NJM1496V (JRC) FLAT PACKAGE

BALANCED MODULATOR/DEMODULATOR



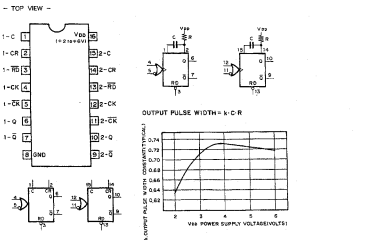
NJM360M (JRC) FLAT PACKAGE

HIGH SPEED VOLTAGE COMPARATOR, (TTL OUTPUT)



MC74HC4538F (MOTOROLA) FLAT PACKAGE

C-MOS DUAL RETRIGGERABLE/
NON-RETRIGGERABLE MONOSTABLE MULTIVIBRATOR

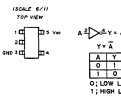


S-8054ALR (SEIKO I AND E) 4.30V~4.60V

C-MOS VOLTAGE DETECTOR

SC7S04F (MOTOROLA) CHIP PACKAGE
TC4S69F (TOSHIBA) CHIP PACKAGE
TC7S04FU (TOSHIBA) CHIP PACKAGE

C-MOS INVERTER

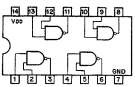


TYPE	VDD
7S04F 7SU04F	+ 2 to + 6V
4S69F 4SU69F	+ 3 to + 18V
TSH04FU	+ 2 to + 5.5V

SN74HC00APW (TI)

C-MOS QUAD 2-INPUT NAND GATES

– TOP VIEW –



A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

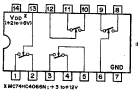
NOTE :

TYPE	Vcc
TC74AC00 TYPE TC74VHC00	+2 to +5.5V
MC74HCT00N	+5V
74ACT00 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC4066NS (TI) FLAT PACKAGE

C-MOS BILATERAL ANALOG SWITCH

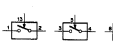
– TOP VIEW –



CONTROL	SWITCH
0	OFF
1	ON

0 ; LOW LEVEL
1 ; HIGH LEVEL

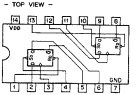
※ MC74HC4066N ; + 3 typ 12V



SN74HC74APW (TI) FLAT PACKAGE

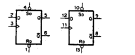
C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET

– TOP VIEW –



INPUTS				OUTPUTS	
SD	RD	CK	D	Qn+1	Qn+1
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1	1
↑	1	↑	1	1	0
↑	1	↑	0	0	1
1	1	0	X	Qn	Qn

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



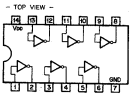
NOTE :

TYPE	Vcc
HCT/ACT	+5V
TC74ACVHC	+2 to +5.5V
OTHERS	+2 to +6V

SN74HCU04APW (TI) FLAT PACKAGE
TC74AC04FS (TOSHIBA) FLAT PACKAGE (SMALL)

C-MOS HEX INVERTERS

– TOP VIEW –



A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

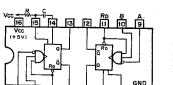
NOTE :

TYPE	Vcc
74HCT04 TYPE	+5V
TC74ACD4 TYPE TC74VHC04 TYPE	+ 2 to + 5.5V
74ACT04 TYPE	+ 4.5 to + 5.5V
OTHER TYPES	+ 2 to + 6V

SN74LS123NS (TI) FLAT PACKAGE

TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS WITH DIRECT RESET

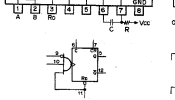
– TOP VIEW –



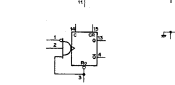
INPUTS				OUTPUTS	
RD	A	B	C	Q	Q̄
0	X	X	0	1	
X	1	X	0	1	
X	X	0	0	1	
1	0	↓	⌊⌊	⌊⌊	
1	↑	1	⌊⌊	⌊⌊	
↑	0	↓	⌊⌊	⌊⌊	

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

OUTPUT PULSE WIDTH



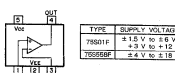
*123 ; Tw = 0.28 (1 + 700/R) CR
*LS123, Tw = 0.32 (1 + 700/R) CR
*123 ; Tw = 0.28 (1 + 700/R) CR
*LS123, Tw = 0.28 (1 + 700/R) CR
*LS123, Tw = 0.45CR



TA75S01F (TOSHIBA)

SINGLE OPERATIONAL AMPLIFIER

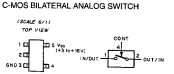
– TOP VIEW –



TYPE	SUPPLY VOLTAGE
75S01F	± 1.5 V to ± 6 V + 3 V to + 12 V
75S05BF	± 4 V to ± 18 V

TC4S66F (TOSHIBA) CHIP PACKAGE

C-MOS BILATERAL ANALOG SWITCH



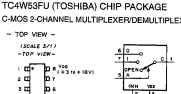
CONT	SWITCH
0	OFF
1	ON

0 ; LOW LEVEL
1 ; HIGH LEVEL

TC4W53FU (TOSHIBA) CHIP PACKAGE

C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER

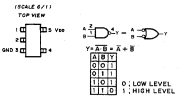
– TOP VIEW –



CONT. INPUT		ON CHANNEL
INH	A	
0	0	0
0	1	1
1	X	OPEN

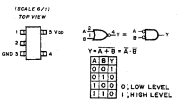
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC7S00FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT NAND GATE



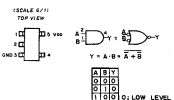
TYPE	VDD
7S00F 7S00FU	+ 2 to + 6V
4011F 4S11F	+ 3 to + 18V
7SH00FU	+ 2 to + 5.5V

TC7S02FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT NOR GATE



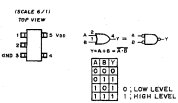
TYPE	VDD
4001F	+ 3 to + 18V
7S02F 7S02FU	+ 2 to + 6V
7SH02FU	

TC7S08F (TOSHIBA) CHIP PACKAGE
TC7S08FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT AND GATE



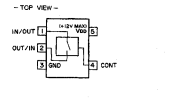
TYPE	VDD
7S08F 7S08FU	+ 2 to + 6V
4081F 14S81F	+ 3 to + 18V
7SH08FU	− 2 to + 5.5V

TC7S32FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT OR GATE

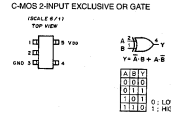


TYPE	VDD
7S32F 7S32FU	+ 2 to + 6V
4S71F	+ 3 to + 18V
7SH32FU	− 2 to + 5.5V

TC7S66FU (TOSHIBA) CHIP PACKAGE
C-MOS ANALOG SWITCH

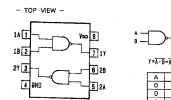


TC7S86FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT EXCLUSIVE OR GATE

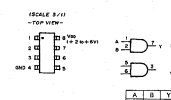


TYPE	VDD
7S86FU	+ 2 to + 6V
7S86F 4S30F	+ 3 to + 18V

TC7W00FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT AND GATE

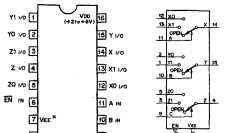


TC7W08FU (TOSHIBA) CHIP PACKAGE
C-MOS 2-INPUT AND GATE



TC74HC4053AFS (TOSHIBA) FLAT PACKAGE
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER

– TOP VIEW –



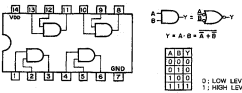
VEE * : VDD – VEE = +2 to +12V
VEE ≦ GND

CONTROL INPUTS					
EN	SELECT			ON CHANNEL	
	C	B	A		
0	0	0	0	Z0	X0
0	0	0	1	Z0	Y0 X1
0	0	1	0	Z0	Y1 X0
0	0	1	1	Z0	Y1 X1
0	1	0	0	Z1	Y0 X0
0	1	0	1	Z1	Y0 X1
0	1	1	0	Z1	Y1 X0
0	1	1	1	Z1	Y1 X1
1	X	X	X	OPEN	

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

TC74VHC08FS (EL) (TOSHIBA) FLAT PACKAGE (SMALL)
C-MOS QUAD 2-INPUT AND GATES

– TOP VIEW –



A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

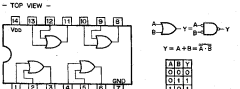
0 : LOW LEVEL
1 : HIGH LEVEL

NOTE :

TYPE	VDD
TC74AC08 TYPE MC74ACT08M	+2 to +5.5V
TC40H	+2 to +8V
OTHER TYPES	+2 to +6v

TC74VHC32FS (EL) (TOSHIBA) FLAT PACKAGE (SMALL)
C-MOS QUAD 2-INPUT OR GATES

– TOP VIEW –



A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0:LOW LEVEL
1:HIGH LEVEL

NOTE :

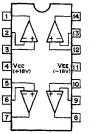
TYPE	VDD
AC/VHC	+2 to +5.5V
HC	+2 to +6V

TL062CPS (TI) FLAT PACKAGE
TL062CPW (TI) FLAT PACKAGE
TL062M (TI)
OPERATIONAL AMPLIFIER\ (J FET INPUT)

– TOP VIEW –

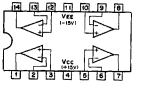
TL064CPW (TI)
OPERATIONAL AMPLIFIER\ (J FET INPUT)

– TOP VIEW –



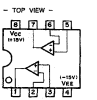
TL084CNS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER\(J FET INPUT)

– TOP VIEW –



UPC4558G2 (NEC) FLAT PACKAGE
DUAL OPERATIONAL AMPLIFIER

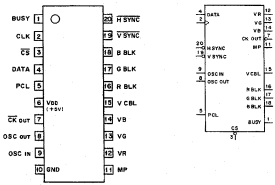
– TOP VIEW –



UPD6453GT-610 (NEC) FLAT PACKAGE

C-MOS ON-SCREEN CHARACTER DISPLAY

– TOP VIEW –

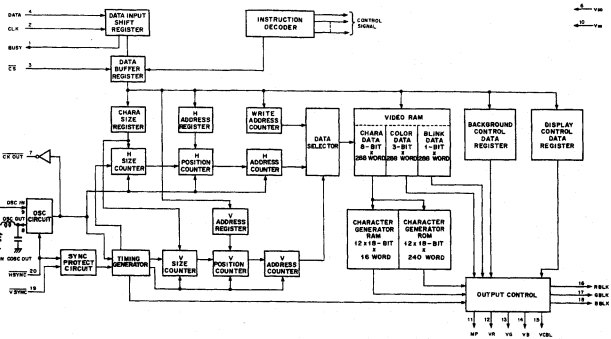


INPUT

CLK	: CLOCK
$\overline{CS}$	: CHIP SELECT
DATA	: SERIAL DATA
H SYNC	: HORIZONTAL SYNC
OSC IN	: OSCILLATOR IN
PCL	: POWER ON CLEAR
V SYNC	: VERTICAL SYNC

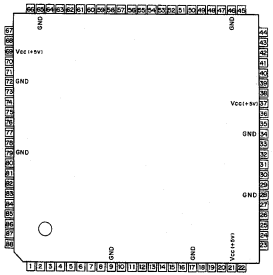
OUTPUT

R_{BLK}, G_{BLK}, B_{BLK}	: R, G, B, BLANKING
BUSY	: BUSY OUT
CK OUT	: CLOCK
MP	: MASK PULSE
OSC OUT	: OSCILLATOR OUT
V_R, V_G, V_B	: R, G, B, CHARACTER DATA
V_{CBL}	: VIDEO CUT BLANKING

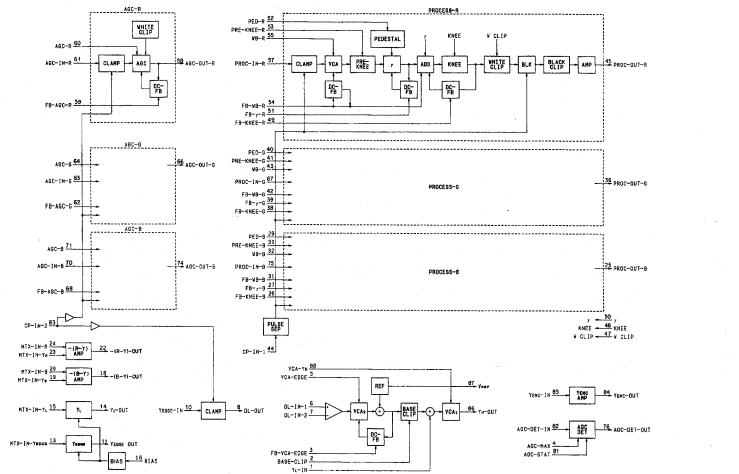


UPC2372AGK (NEC) FLAT PACKAGE

3-CH PROCESS AMP & AGC



PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	I	YL-IN	23	I	MTX-IN-Ya	45	O	PROC-OUT-R	67	I	PROC-IN-G
2	I	BASE-CLIP	24	I	MTX-IN-R	46	–	GND	68	O	FB-AGC-B
3	O	FB-VCA-EDGE	25	O	PROC-OUT-B	47	I	WCLIP	69	–	Vcc (+8V)
4	I	AGC-MAX	26	O	FB-KNEE-B	48	I	KNEE	70	I	AGC-IN-B
5	I	VCA-EDGE	27	O	FB-y-B	49	O	FB-KNEER	71	I	AGC-B
6	I	DL-IN1	28	–	GND	50	I	y	72	–	GND
7	I	DL-IN2	29	I	PED-B	51	O	FB-y-R	73	–	N.C.
8	O	DL-OUT	30	I	Pre-KNEE-B	52	I	PED-R	74	O	AGC-OUT-B
9	–	GND	31	O	FB-WB-B	53	I	Pre-KNEER	75	I	PROC-IN-B
10	I	Ydoor-IN	32	I	WB-B	54	O	FB-WB-R	76	O	AGC-DET-OUT
11	O	Ydoor-OUT	33	–	N.C.	55	I	WB-R	77	–	N.C.
12	–	N.C.	34	–	GND	56	–	N.C.	78	I	N.C.
13	I	MTX-IN-Ydoor	35	–	N.C.	57	I	PROC-IN-R	79	–	GND
14	O	YL-OUT	36	O	PROC-OUT-G	58	O	AGC-OUT-R	80	–	N.C.
15	I	MTX-IN-YL	37	–	Vcc (+5V)	59	O	FB-AGC-R	81	O	AGC STAT
16	O	BIAS	38	O	FB-KNEE-G	60	I	AGC-R	82	I	AGC-DET-IN
17	–	GND	39	O	FB-y-G	61	I	AGC-IN-R	83	I	CP-IN2
18	O	(B-Y)-OUT	40	I	PED-G	62	O	FB-AGC-G	84	O	Ydoc-OUT
19	I	MTX-IN-Ya	41	I	Pre-KNEE-G	63	I	AGC-IN-G	85	I	Ydoc-IN
20	I	MTX-IN-B	42	O	FB-WB-G	64	I	AGC-G	86	O	Ya-OUT
21	–	Vcc (+5V)	43	I	WB-G	65	–	GND	87	O	Vref
22	O	(R-Y)-OUT	44	I	CP-IN1	66	O	AGC-OUT-G	88	I	VCA-Yin



INPUT

AGC-B : AGC GAIN CONTROL FOR B-CH
AGC-DET-IN : AGC DETECT
AGC-G : AGC GAIN CONTROL FOR G-CH
AGC-IN-B : B-CH AGC
AGC-IN-G : G-CH AGC
AGC-IN-R : R-CH AGC
AGC-MAX : AGC MAX GAIN CONTROL
AGC-R : AGC GAIN CONTROL FOR R-CH
BASECLIP : BASE CLIP QUANTITY CONTROL FOR HORIZONTAL EDGE COMPENSATION SIGNAL
CP-IN-1 : CLAMP PULSE/BLANKING PULSE
CP-IN-2 : CLAMP PULSE FOR AGC CIRCUIT
DL-IN1 : NON-INVERT INPUT FOR HORIZONTAL EDGE COMPENSATION DIFFERENTIAL AMPLIFIER
DL-IN2 : INVERT INPUT FOR HORIZONTAL EDGE COMPENSATION DIFFERENTIAL AMPLIFIER
KNEE : KNEE CONTROL
MTX-IN-B : B-Y SIGNAL MATRIX INPUT
MTX-IN-R : R-Y SIGNAL MATRIX INPUT
MTX-IN-YB : B-Y SIGNAL MATRIX INPUT
MTX-IN-YEDGE : LUMINANCE SIGNAL MATRIX FOR HORIZONTAL EDGE COMPENSATION
MTX-IN-YL : LUMINANCE SIGNAL MATRIX
MTX-IN-YR : R-Y SIGNAL MATRIX
PED-B : PEDESTAL CONTROL FOR B-CH
PED-G : PEDESTAL CONTROL FOR G-CH
PED-R : PEDESTAL CONTROL FOR R-CH
PreKNEE-B : Pre-KNEE CONTROL FOR B-CH
PreKNEE-G : Pre-KNEE CONTROL FOR G-CH
PreKNEE-R : Pre-KNEE CONTROL FOR R-CH
PROC-IN-B : B-CH PROCESS
PROC-IN-G : G-CH PROCESS
PROC-IN-R : R-CH PROCESS
VCA-EDGE : OUTPUT LEVEL CONTROL FOR HORIZONTAL EDGE COMPENSATED LUMINANCE SIGNAL
VCA-YH : HORIZONTAL EDGE COMPENSATED OUTPUT LEVEL CONTROL
WB-B : WHITE BALANCE CONTROL FOR B-CH
WB-G : WHITE BALANCE CONTROL FOR G-CH
WB-R : WHITE BALANCE CONTROL FOR R-CH
WCLIP : WHITE CLIP LEVEL CONTROL
YEDGE IN : LUMINANCE SIGNAL FOR HORIZONTAL EDGE COMPENSATION
YENC-IN : LUMINANCE SIGNAL AMPLIFIER
YL-IN : INPUT FOR LUMINANCE SIGNAL
γ : γ CONTROL

OUTPUT

AGC STAT : AGC THRESHOLD CONTROL
AGC-DET-OUT : AGC DETECT
AGC-OUT-B : B-CH AGC
AGC-OUT-G : G-CH AGC
AGC-OUT-R : R-CH AGC
BIAS : BIAS
DL-OUT : HORIZONTAL EDGE COMPENSATION SIGNAL FOR LUMINANCE SIGNAL
FB-AGC-B : DC FEEDBACK FOR B-CH AGC
FB-AGC-G : DC FEEDBACK FOR G-CH AGC
FB-AGC-R : DC FEEDBACK FOR R-CH AGC
FB-KNEE-B : DC FEEDBACK FOR B-CH KNEE
FB-KNEE-G : DC FEEDBACK FOR G-CH KNEE
FB-KNEE-R : DC FEEDBACK FOR R-CH KNEE
FB-VCA-EDGE : CAPACITOR FOR DC FEEDBACK
FB-WB-B : DC FEEDBACK FOR B-CH WHITE BALANCE
FB-WB-G : DC FEEDBACK FOR G-CH WHITE BALANCE
FB-WB-R : DC FEEDBACK FOR R-CH WHITE BALANCE
FB-γ-B : DC FEEDBACK FOR B-CH γ
FB-γ-G : DC FEEDBACK FOR G-CH γ
FB-γ-R : DC FEEDBACK FOR R-CH γ
PROC-OUT-B : B-CH PROCESS
PROC-OUT-G : G-CH PROCESS
PROC-OUT-R : R-CH PROCESS
VREF : VREF (2.2V)
YEDGE-OUT : MATRIX OF LUMINANCE SIGNAL FOR HORIZONTAL EDGE COMPENSATION
YENC-OUT : LUMINANCE SIGNAL AMPLIFIER
YH-OUT : OUTPUT OF APARTURE COMPENSATION CIRCUIT
YL-OUT : LUMINANCE SIGNAL MATRIX OUTPUT
(B-Y)-OUT : B-Y SIGNAL MATRIX
(R-Y)-OUT : R-Y SIGNAL MATRIX

SECTION D
REPAIR PARTS

D-1. PARTS INFORMATION

• Safety Related Components Warning
components identified by ⚠ marking on the schematic diagrams and repair parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear in this manual or in service bulletins and service manual supplements published by Sony.

• Replacement Parts supplied from Sony Parts center will sometimes have a different shape from the original parts.
This is due to "accommodating the improved parts and/or engineering changes " or "standardization of genuine parts" . This manual's repair parts list indicates the parts numbers of "the standardized genuine parts at present" .
Regarding engineering parts changes in our engineering department refer to Sony service bullentins and service manual supplements.

• Items marked "o" in the SP column of the parts list are not stocked since they are seldom required for routine service.
Some delay should be anticipated when ordering these items.

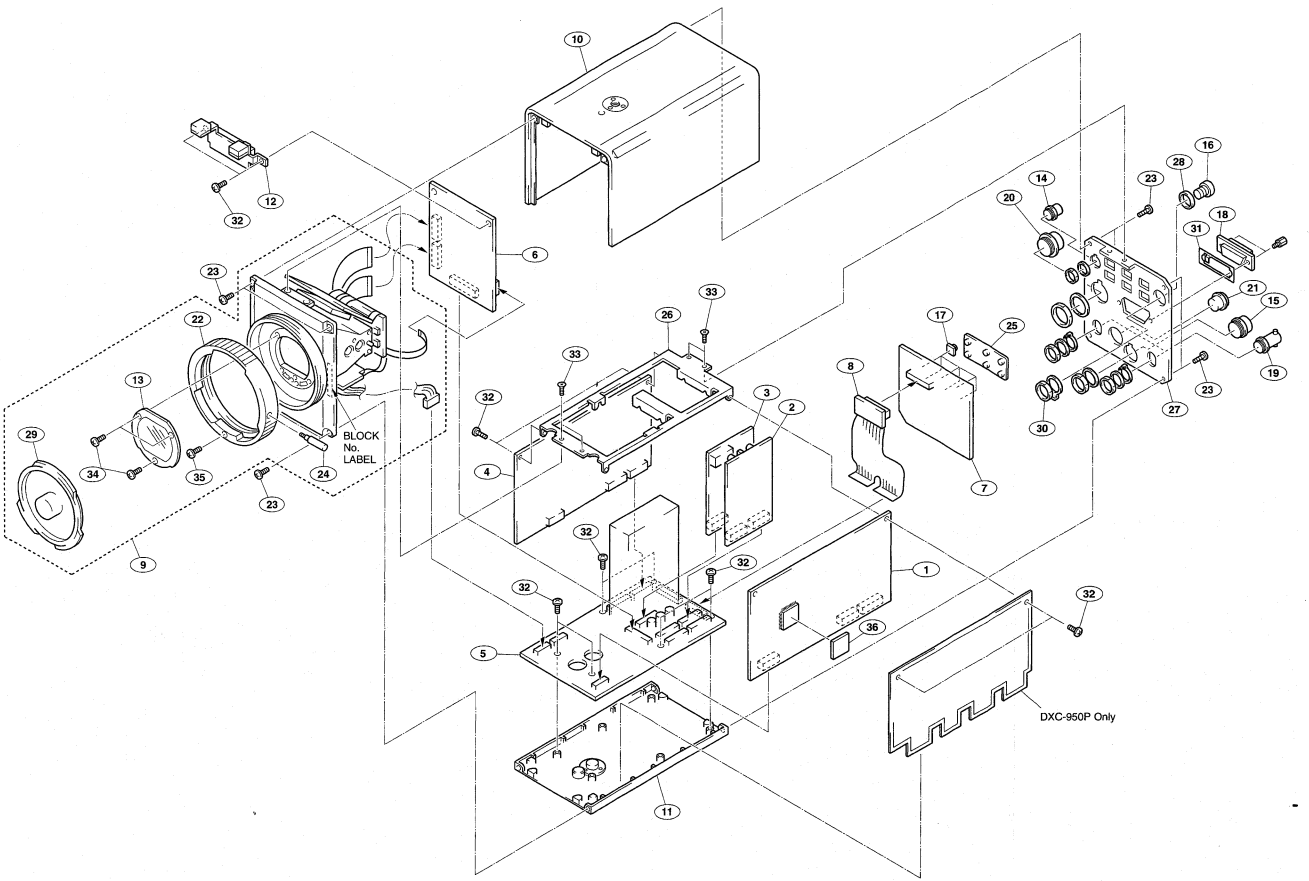
• Abbreviations

Ref.No.	Description
C□□ , CV □□ R□□ , RV □□	CAPACITOR RESISTOR

• Units for Capacitors, Inductors and Resistors.
The following units are assumed in schematic diagrams and repair parts list unless otherwise specified.
Capacitors : μF or pF
Inductors : μH
Resistors : Ω

D-2. EXPLODED VIEW

No.	Part No.	SP	Description
1	A-8272-333-A	o	MOUNTED CIRCUIT BOARD, PR-215 [for DXC-950/970MD]
	A-8272-351-A	o	MOUNTED CIRCUIT BOARD, PR-215P [for DXC-950P]
2	A-8272-334-A	o	MOUNTED CIRCUIT BOARD, IF-518 [for DXC-950/970MD]
	A-8272-354-A	o	MOUNTED CIRCUIT BOARD, IF-518P [for DXC-950P]
3	A-8272-337-A	o	MOUNTED CIRCUIT BOARD, SG-236 [for DXC-950/970MD]
	A-8272-355-A	o	MOUNTED CIRCUIT BOARD, SG-236P [for DXC-950P]
4	A-8272-339-A	o	MOUNTED CIRCUIT BOARD, AT-97
5	A-8272-341-A	o	MOUNTED CIRCUIT BOARD, MB-613
6	A-8272-343-A	o	MOUNTED CIRCUIT BOARD, TG-160 [for DXC-950/970MD]
	A-8272-350-A	o	MOUNTED CIRCUIT BOARD, TG-160P [for DXC-950P]
7	A-8272-344-A	o	MOUNTED CIRCUIT BOARD, CN-1137
8	A-8272-345-A	o	MOUNTED CIRCUIT BOARD, HN-220
9	A-8272-782-A	s	CHU (NTSC) FOR SERVICE [for DXC-950]
	A-8272-783-A	s	CHU (PAL) FOR SERVICE [for DXC-950P]
	A-8272-784-A	s	CHU MD FOR SERVICE [for DXC-970MD]
10	X-3678-466-1	s	CASE ASSY, UPPER [for DXC-950/950P]
	X-3678-469-1	s	CASE ASSY, UPPER [for DXC-970MD]
11	X-3678-467-1	s	CASE ASSY, LOWER
12	X-3678-468-1	o	HEAT SINK ASSY, IC
13	1-547-463-11	o	FILTER UNIT, OPTICAL [for DXC-950/950P]
	1-547-904-11	o	FILTER UNIT, OPTICAL [for DXC-970MD]
14	1-562-222-21	s	CONNECTOR, 6P, FEMALE "LENS"
15	1-562-381-00	s	CONNECTOR, ROUND TYPE 12P, MALE "DC IN/REMOTE"
16	1-569-084-12	s	CONNECTOR, SYNCHRONIZE, FEMALE "FLASH"
17	1-572-473-11	s	SWITCH, PUSH
18	1-580-090-11	s	CONNECTOR, D-SUB 9P, FEMALE "RGB/SYNC"
19	1-580-724-21	s	CONNECTOR, BNC "VIDEO OUT" "GENLOCK"
20	1-691-629-11	s	CONNECTOR, ROUND TYPE 20P, MALE "CCU"
21	1-774-806-11	s	CONNECTOR, ROUND TYPE 8P, FEMALE "REMOTE"
22	3-174-668-01	o	RING, MOUNT
23	3-184-550-41	s	SCREW, +B 2.6 NI
24	3-678-629-00	s	LEVER, MOUNT
25	3-694-145-01	s	SHEET, REAR
26	3-694-146-01	o	STAY
27	3-694-148-01	s	PANEL, REAR
28	3-694-152-01	o	SPACER
29	3-699-144-02	s	CAP, MOUNT
30	3-712-653-01	s	NUT (M8), TUBE
31	3-737-536-01	o	LUG, GROUND, CONNECTOR
32	7-621-772-18	s	SCREW +B 2X4
33	7-627-452-27	s	SCREW +K 2X4
34	7-627-452-28	s	SCREW, PRECISION +K 2X4
35	7-627-552-58	s	SCREW, PRECISION +P 1.7X5
36	3-603-231-01	s	RUBBER, HEAT RESISTING (D) [for DXC-950/970MD]


BLOCK No. LABEL
DXC-950P Only

D-3.ELECTRICAL PARTS LIST

AT-97 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-339-A	o	MOUNTED CIRCUIT BOARD, AT-97
C401	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C402	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C403	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C404	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C405	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C406	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C407	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C408	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C409	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C412	1-104-852-11	s	TANTALUM 22uF 20% 10V
C413	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C414	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C415	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C416	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C417	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C418	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C419	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C420	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C421	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C422	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C423	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C424	1-135-190-21	s	TANTALUM 0.1uF 20% 20V
C425	1-135-208-11	s	TANTALUM 1uF 20% 10V
C426	1-135-212-21	s	TANTALUM, CHIP 2.2uF 20% 35V
C427	1-104-914-11	s	TANTALUM, CHIP 22uF 20% 16V
C428	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C429	1-135-208-11	s	TANTALUM 1uF 20% 10V
C430	1-135-208-11	s	TANTALUM 1uF 20% 10V
C431	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C432	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C433	1-135-166-21	s	TANTALUM, CHIP 47uF 10% 10V
C434	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C435	1-162-957-11	s	CERAMIC 220PF 5% 50V
C436	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C437	1-107-854-11	s	TANTALUM 68uF 20% 6.3V
C438	1-135-212-21	s	TANTALUM, CHIP 2.2uF 20% 35V
C439	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C445	1-164-363-11	s	CERAMIC 560PF 5% 50V
C446	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C447	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C448	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C449	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C450	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C451	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C452	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C453	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C454	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C455	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C456	1-104-914-11	s	TANTALUM, CHIP 22uF 20% 16V
C457	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C458	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C459	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C462	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C463	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C464	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C465	1-135-208-11	s	TANTALUM 1uF 20% 10V
C466	1-135-208-11	s	TANTALUM 1uF 20% 10V

(AT-97 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C467	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C468	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C469	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C470	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C471	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C472	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C473	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C474	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C475	1-135-208-11	s	TANTALUM 1uF 20% 10V
C476	1-107-826-11	s	CERAMIC 0.1uF 10% 16V
C477	1-135-212-21	s	TANTALUM, CHIP 2.2uF 20% 35V
C478	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C479	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C480	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C481	1-162-957-11	s	CERAMIC 220PF 5% 50V
C482	1-162-957-11	s	CERAMIC 220PF 5% 50V
C483	1-164-156-11	s	CERAMIC 0.1uF 25V
C484	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C485	1-164-156-11	s	CERAMIC 0.1uF 25V
C486	1-164-156-11	s	CERAMIC 0.1uF 25V
C487	1-164-156-11	s	CERAMIC 0.1uF 25V
C489	1-164-156-11	s	CERAMIC 0.1uF 25V
C490	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C491	1-104-911-11	s	TANTALUM 33uF 20% 10V
C492	1-164-156-11	s	CERAMIC 0.1uF 25V
C493	1-164-156-11	s	CERAMIC 0.1uF 25V
C494	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C495	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C496	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
CN401	1-568-366-41	s	CONNECTOR, BOARD TO BOARD 16P
CN402	1-569-607-11	s	CONNECTOR, BOARD TO BOARD 24P
CN403	1-569-607-11	s	CONNECTOR, BOARD TO BOARD 24P
D401	8-719-800-76	s	DIODE 1SS226
D402	8-719-800-76	s	DIODE 1SS226
D403	8-719-800-76	s	DIODE 1SS226
D404	8-719-123-82	s	DIODE 1SS303
D406	8-719-123-82	s	DIODE 1SS303
D407	8-719-123-82	s	DIODE 1SS303
D409	8-719-800-76	s	DIODE 1SS226
D410	8-719-404-46	s	DIODE MA110
IC401	8-759-058-58	s	IC TC7S04FU(TE85R)
IC402	8-759-082-58	s	IC TC7W08FU
IC403	8-759-987-41	s	IC SN74HC4066NS
IC404	8-759-300-71	s	IC HD14053BFP
IC405	8-759-009-06	s	IC MC14052BF
IC406	8-759-906-53	s	IC TL062CPS
IC407	8-759-908-92	s	IC TL084CNS
IC408	8-759-300-71	s	IC HD14053BFP
IC410	8-759-058-62	s	IC TC7S08FU(TE85R)
IC413	8-759-058-58	s	IC TC7S04FU(TE85R)
IC414	8-759-082-60	s	IC TC7S66FU
IC415	8-759-981-48	s	IC TL082M
IC416	8-759-009-06	s	IC MC14052BF
IC417	8-759-058-58	s	IC TC7S04FU(TE85R)
IC418	8-759-082-58	s	IC TC7W08FU
IC419	8-759-058-54	s	IC TC7S00FU(TE85R)
IC420	8-759-195-81	s	IC TC7S86FU
IC421	8-759-252-59	s	IC MAX202CSE

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Ref. No. or Q'ty	Part No.	SP	Description
IC422	8-759-386-94	s	IC HS/337-950-V1.00
IC423	8-759-058-62	s	IC TC7S08FU(TE85R)
IC424	8-759-300-71	s	IC HD14053BFP
IC425	8-759-906-53	s	IC TL062CPS
IC426	8-759-946-03	s	IC S-8054ALR-LN-S
IC427	8-759-635-27	s	IC M62352GP-E1
IC428	8-759-009-05	s	IC MC14051BF
IC429	8-759-551-68	s	IC M5M80021FP
IC430	8-759-078-75	s	IC UPD6453GT-610
IC431	8-759-635-27	s	IC M62352GP-E1
IC432	8-759-082-61	s	IC TC4W53FU
IC433	8-759-300-71	s	IC HD14053BFP
IC434	8-759-076-06	s	IC TL064CPW
IC435	8-759-906-53	s	IC TL062CPS
IC437	8-759-082-61	s	IC TC4W53FU
IC438	8-759-058-64	s	IC TC7S32FU(TE85R)
IC439	8-759-049-98	s	IC SN74HC74APW-E05
IC440	8-759-058-64	s	IC TC7S32FU(TE85R)
IC441	8-759-058-58	s	IC TC7S04FU(TE85R)
L401	1-412-030-11	s	INDUCTOR CHIP 22uH
L402	1-412-030-11	s	INDUCTOR CHIP 22uH
L403	1-412-030-11	s	INDUCTOR CHIP 22uH
L404	1-408-784-11	s	INDUCTOR CHIP 39uH
Q401	8-729-117-32	s	TRANSISTOR 2SC4177
Q402	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q403	8-729-117-32	s	TRANSISTOR 2SC4177
Q404	8-729-117-32	s	TRANSISTOR 2SC4177
Q405	8-729-117-32	s	TRANSISTOR 2SC4177
Q406	8-729-117-32	s	TRANSISTOR 2SC4177
Q407	8-729-117-32	s	TRANSISTOR 2SC4177
Q408	8-729-117-32	s	TRANSISTOR 2SC4177
Q409	8-729-117-32	s	TRANSISTOR 2SC4177
Q411	8-729-427-83	s	TRANSISTOR XP6501
Q412	8-729-427-83	s	TRANSISTOR XP6501
Q413	8-729-427-83	s	TRANSISTOR XP6501
Q414	8-729-427-83	s	TRANSISTOR XP6501
Q415	8-729-427-80	s	TRANSISTOR XP6401
Q416	8-729-427-83	s	TRANSISTOR XP6501
Q417	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q418	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q419	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q420	8-729-117-32	s	TRANSISTOR 2SC4177
Q421	8-729-117-32	s	TRANSISTOR 2SC4177
Q422	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q423	8-729-117-32	s	TRANSISTOR 2SC4177
Q424	8-729-117-32	s	TRANSISTOR 2SC4177
Q425	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q426	8-729-117-32	s	TRANSISTOR 2SC4177
Q427	8-729-117-32	s	TRANSISTOR 2SC4177
Q428	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q429	8-729-118-58	s	TRANSISTOR 2SK852-X4
Q430	8-729-143-14	s	TRANSISTOR 2SC4176-B35
Q431	8-729-143-14	s	TRANSISTOR 2SC4176-B35
R401	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R402	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R403	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R404	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R405	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R406	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R407	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R408	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R409	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R411	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R412	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R413	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R414	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R415	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R416	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R417	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R418	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R419	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R420	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R421	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R422	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R423	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R424	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R425	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R427	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R428	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R429	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R430	1-218-873-11	s	METAL, CHIP 12K 0.50% 1/16W
R431	1-218-873-11	s	METAL, CHIP 12K 0.50% 1/16W
R432	1-216-864-11	s	METAL, CHIP 0-OHM
R433	1-218-873-11	s	METAL, CHIP 12K 0.50% 1/16W
R434	1-218-724-11	s	METAL 22K 0.50% 1/16W
R435	1-218-724-11	s	METAL 22K 0.50% 1/16W
R436	1-218-725-11	s	METAL 24K 0.50% 1/16W
R437	1-218-740-11	s	METAL 100K 0.50% 1/16W
R438	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R439	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R440	1-211-977-11	s	METAL, CHIP 22 0.50% 1/16W
R441	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R442	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R443	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R444	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R445	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R446	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R447	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R448	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R449	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R451	1-216-864-11	s	METAL, CHIP 0-OHM
R452	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R453	1-216-864-11	s	METAL, CHIP 0-OHM
R454	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R456	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R457	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R458	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R459	1-216-853-11	s	METAL, CHIP 470K 5% 1/16W
R460	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R461	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R462	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R463	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R464	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R469	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R479	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R481	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R482	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W

(AT-97 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R486	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R487	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R488	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R489	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R491	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R492	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R493	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R494	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R495	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R496	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R497	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R498	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R499	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R500	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R501	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R504	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R505	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R507	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R508	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R509	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R510	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R513	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R514	1-216-842-11	s	METAL, CHIP 56K 5% 1/16W
R515	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R516	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R517	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R518	1-216-842-11	s	METAL, CHIP 56K 5% 1/16W
R519	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R520	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R521	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R522	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R523	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R524	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R525	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R526	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R527	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R528	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R529	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R530	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R531	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R532	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R533	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R535	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R536	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R537	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R538	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R539	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R540	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R541	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R542	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R543	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R544	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R545	1-218-716-11	s	METAL 10K 0.50% 1/16W
R546	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R547	1-218-716-11	s	METAL 10K 0.50% 1/16W
R548	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R549	1-218-716-11	s	METAL 10K 0.50% 1/16W
R550	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R551	1-218-714-11	s	METAL 8.2K 0.50% 1/16W

(AT-97 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R552	1-218-714-11	s	METAL 8.2K 0.50% 1/16W
R553	1-218-714-11	s	METAL 8.2K 0.50% 1/16W
R554	1-216-844-11	s	METAL, CHIP 82K 5% 1/16W
R555	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R556	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R557	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R558	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R559	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R560	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R561	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R563	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R564	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R565	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R566	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R570	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R571	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R572	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R573	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R574	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R575	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R576	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R577	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R578	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R581	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
SW401	1-762-078-11	s	SWITCH, SLIDE
SW402	1-572-018-11	s	SWITCH, SLIDE
X401	1-577-110-11	s	VIBRATOR, CRYSTAL 20.0MHz

CN-1137 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-344-A	o	MOUNTED CIRCUIT BOARD, CN-1137
C601	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C602	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C603	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C604	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C605	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C606	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C607	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C608	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C609	1-107-689-21	s	TANTALUM 1uF 10% 35V
C610	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C611	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C612	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C613	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C614	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C615	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C616	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C617	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C618	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C619	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C620	1-162-974-11	s	CERAMIC 0.01uF 50V
C621	1-164-156-11	s	CERAMIC 0.1uF 25V
C622	1-164-346-11	s	CERAMIC 1uF 16V
C623	1-164-156-11	s	CERAMIC 0.1uF 25V
C624	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C625	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C626	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C627	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C628	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C629	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
CN606	1-774-672-11	o	CONNECTOR, BOARD TO BOARD 42P
D601	8-719-510-30	s	DIODE D2FL20
D602	8-719-017-07	s	DIODE 02DZ5.6-TPH3
D603	8-719-123-76	s	THYRISTOR 03P4J
D604	8-719-123-76	s	THYRISTOR 03P4J
F601	⚠1-576-213-11	s	FUSE, CHIP 1.6A 125V
F602	⚠1-576-213-11	s	FUSE, CHIP 1.6A 125V
FB601	1-500-215-11	s	BEAD, FERRITE (CHIP)
FB602	1-500-215-11	s	BEAD, FERRITE (CHIP)
FB603	1-500-215-11	s	BEAD, FERRITE (CHIP)
FB604	1-500-215-11	s	BEAD, FERRITE (CHIP)
IC601	8-759-082-61	s	IC TC4W53FU
IC602	8-759-066-59	s	IC TC74HC4053AFS
IC603	8-759-066-59	s	IC TC74HC4053AFS
IC604	8-759-075-66	s	IC TA75S01F
L601	1-410-997-31	s	INDUCTOR CHIP 2.2uH
L602	1-410-997-31	s	INDUCTOR CHIP 2.2uH
L603	1-412-010-41	s	INDUCTOR CHIP 22uH
Q601	8-729-104-25	s	TRANSISTOR 2SB804-AV
Q602	8-729-117-32	s	TRANSISTOR 2SC4177
Q603	8-729-117-16	s	TRANSISTOR 2SA1611-M6
R602	1-218-851-11	s	METAL, CHIP 1.5K 0.50% 1/16W
R603	1-218-698-11	s	METAL 1.8K 0.50% 1/16W
R604	1-218-856-11	s	METAL, CHIP 2.4K 0.50% 1/16W
R605	1-218-723-11	s	METAL 20K 0.50% 1/16W
R606	1-218-883-11	s	METAL, CHIP 33K 0.50% 1/16W

(CN-1137 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R607	1-218-692-11	s	METAL 1K 0.50% 1/16W
R608	1-218-716-11	s	METAL 10K 0.50% 1/16W
R609	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R610	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R611	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R612	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R613	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R614	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R615	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R616	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R617	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R618	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R619	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R620	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R621	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R622	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R623	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R624	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R625	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R626	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R627	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R628	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R629	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R630	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R631	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R632	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R633	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R634	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R635	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R636	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R637	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R638	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R639	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R640	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R641	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R642	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R643	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R644	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R645	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R646	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R651	1-216-864-11	s	METAL, CHIP 0-OHM
R652	1-216-864-11	s	METAL, CHIP 0-OHM
SW601	1-572-473-11	s	SWITCH, TACTIL
SW602	1-572-473-11	s	SWITCH, TACTIL
SW603	1-572-473-11	s	SWITCH, TACTIL
SW604	1-572-473-11	s	SWITCH, TACTIL
SW605	1-572-473-11	s	SWITCH, TACTIL
SW606	1-572-473-11	s	SWITCH, TACTIL

HN-220 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-345-A	o	MOUNTED CIRCUIT BOARD, HN-220
CN1	1-695-324-11	s	CONNECTOR, BOARD TO BOARD 42P

IF-518 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-334-A	o	MOUNTED CIRCUIT BOARD, IF-518 [for DXC-950, DXC-970MD]
1pc	A-8272-354-A	o	MOUNTED CIRCUIT BOARD, IF-518P [for DXC-950P]
C200	1-110-569-11	s	TANTALUM 47uF 20% 6.3V
C201	1-110-569-11	s	TANTALUM 47uF 20% 6.3V
C202	1-104-914-11	s	TANTALUM, CHIP 22uF 20% 16V
C203	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C204	1-110-569-11	s	TANTALUM 47uF 20% 6.3V
C205	1-110-569-11	s	TANTALUM 47uF 20% 6.3V
C206	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C207	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C208	1-126-391-11	s	ELECT, CHIP 47uF 20% 6.3V
C210	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C211	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C212	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C213	1-162-911-11	s	CERAMIC, CHIP 6PF 50V
C214	1-104-823-11	s	TANTALUM 47uF 20% 16V
C215	1-164-156-11	s	CERAMIC 0.1uF 25V
C216	1-162-908-11	s	CERAMIC 3PF 0.25PF 50V [for DXC-950, DXC-970MD]
C216	1-162-909-11	s	CERAMIC 4PF 0.25PF 50V [for DXC-950P]
C217	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C218	1-162-974-11	s	CERAMIC 0.01uF 50V
C219	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V [for DXC-950, DXC-970MD]
C219	1-162-922-11	s	CERAMIC, CHIP 39PF 5% 50V [for DXC-950P]
C220	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C221	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C222	1-164-156-11	s	CERAMIC 0.1uF 25V
C223	1-164-156-11	s	CERAMIC 0.1uF 25V
C224	1-104-852-11	s	TANTALUM 22uF 20% 10V
C225	1-104-852-11	s	TANTALUM 22uF 20% 10V
C226	1-162-974-11	s	CERAMIC 0.01uF 50V
C228	1-107-689-21	s	TANTALUM 1uF 10% 35V
C229	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C230	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C232	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C233	1-162-964-11	s	CERAMIC 0.033uF 10% 50V
C234	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C236	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C238	1-164-156-11	s	CERAMIC 0.1uF 25V
C239	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C240	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C241	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C242	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C243	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C244	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V
C245	1-162-905-11	s	CERAMIC 1PF 0.25PF 50V
C246	1-104-913-11	s	TANTALUM 10uF 20% 16V
C247	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C248	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C249	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C250	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C252	1-104-913-11	s	TANTALUM 10uF 20% 16V
C253	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C254	1-104-752-11	s	TANTALUM 33uF 20% 6.3V

(IF-518 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C258	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C260	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C261	1-164-156-11	s	CERAMIC 0.1uF 25V
C263	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C264	1-110-569-11	s	TANTALUM 47uF 20% 6.3V
C266	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C267	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C268	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C269	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C270	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V [for DXC-950, DXC-970MD]
C270	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V [for DXC-950P]
C271	1-162-925-11	s	CERAMIC, CHIP 68PF 5% 50V [for DXC-950, DXC-970MD]
C271	1-162-920-11	s	CERAMIC, CHIP 27PF 5% 50V [for DXC-950P]
C272	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V [for DXC-950, DXC-970MD]
C272	1-162-917-11	s	CERAMIC, CHIP 15PF 5% 50V [for DXC-950P]
C277	1-162-916-11	s	CERAMIC, CHIP 12PF 5% 50V
CN200	1-569-607-11	s	CONNECTOR, BOARD TO BOARD 24P
CN201	1-569-607-11	s	CONNECTOR, BOARD TO BOARD 24P
IC200	8-759-058-62	s	IC TC7S08FU(TE85R)
IC201	8-759-082-55	s	IC TC7W00FU
IC202	8-759-258-43	s	IC LT1253CS8-E2
IC203	8-759-082-61	s	IC TC4W53FU
IC204	8-752-332-69	s	IC CXL5504M
IC205	8-759-260-44	s	IC LT1254CS-E2
IC206	8-759-066-59	s	IC TC74HC4053AFS
IC207	8-759-066-59	s	IC TC74HC4053AFS
IC208	8-759-260-44	s	IC LT1254CS-E2
IC209	8-759-058-64	s	IC TC7S32FU(TE85R)
L200	1-412-792-41	s	INDUCTOR 22uH
L201	1-412-792-41	s	INDUCTOR 22uH
L202	1-412-792-41	s	INDUCTOR 22uH
L203	1-412-792-41	s	INDUCTOR 22uH
L204	1-412-792-41	s	INDUCTOR 22uH
L205	1-412-792-41	s	INDUCTOR 22uH
L206	1-412-792-41	s	INDUCTOR 22uH
L207	1-410-656-11	s	INDUCTOR CHIP 150uH [for DXC-950, DXC-970MD]
L207	1-410-655-31	s	INDUCTOR CHIP 120uH [for DXC-950P]
L208	1-412-010-41	s	INDUCTOR CHIP 22uH
L209	1-412-792-41	s	INDUCTOR 22uH
L210	1-414-194-11	s	INDUCTOR 33uH
L211	1-414-194-11	s	INDUCTOR 33uH
L212	1-414-194-11	s	INDUCTOR 33uH
L213	1-414-194-11	s	INDUCTOR 33uH
L214	1-412-808-21	s	INDUCTOR 470uH
L216	1-412-798-11	s	INDUCTOR 68uH [for DXC-950, DXC-970MD]
L216	1-410-386-11	s	INDUCTOR CHIP 27uH [for DXC-950P]
L217	1-412-798-11	s	INDUCTOR 68uH [for DXC-950, DXC-970MD]
L217	1-410-386-11	s	INDUCTOR CHIP 27uH [for DXC-950P]
Q200	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q201	8-729-429-67	s	TRANSISTOR 2SA1791-Q

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Ref. No. or Q'ty	Part No.	SP	Description
Q202	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q203	8-729-427-83	s	TRANSISTOR XP6501
Q204	8-729-427-83	s	TRANSISTOR XP6501
Q205	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q206	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q207	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q208	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q209	8-729-427-83	s	TRANSISTOR XP6501
Q210	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q211	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q212	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q213	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q214	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q215	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q216	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q217	8-729-425-76	s	TRANSISTOR 2SC4627-D(TXE)
Q219	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q222	8-729-425-76	s	TRANSISTOR 2SC4627-D(TXE)
Q223	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q224	8-729-427-74	s	TRANSISTOR XP4601
Q225	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q228	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q229	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q230	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q231	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q232	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q233	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q234	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q235	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q236	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q237	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q238	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q239	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q240	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q241	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q242	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q243	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q244	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q245	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q247	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q248	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q249	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q250	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q251	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q252	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q253	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q254	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q256	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q257	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q258	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q259	8-729-429-63	s	TRANSISTOR 2SC4656-Q
R200	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R201	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R202	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R203	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R204	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R205	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R206	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R207	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R208	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R210	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R211	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R212	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R213	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R214	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R215	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R216	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R218	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R219	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R220	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R221	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R222	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R223	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R224	1-216-820-11	s	METAL, CHIP 820 5% 1/16W [for DXC-950, DXC-970MD]
R224	1-216-818-11	s	METAL, CHIP 560 5% 1/16W [for DXC-950P]
R225	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R226	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R227	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R228	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R229	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R230	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R231	1-216-820-11	s	METAL, CHIP 820 5% 1/16W [for DXC-950, DXC-970MD]
R231	1-216-818-11	s	METAL, CHIP 560 5% 1/16W [for DXC-950P]
R233	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R234	1-218-740-11	s	METAL 100K 0.50% 1/16W
R235	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R236	1-218-739-11	s	METAL 91K 0.50% 1/16W
R237	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R238	1-218-710-11	s	METAL 5.6K 0.50% 1/16W
R239	1-218-889-11	s	METAL, CHIP 56K 0.50% 1/16W
R240	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R241	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R242	1-218-702-11	s	METAL 2.7K 0.50% 1/16W
R243	1-218-720-11	s	METAL 15K 0.50% 1/16W
R244	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R246	1-218-883-11	s	METAL, CHIP 33K 0.50% 1/16W [for DXC-950, DXC-970MD]
R246	1-218-732-11	s	METAL 47K 0.50% 1/16W [for DXC-950P]
R247	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R248	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R249	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R250	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R251	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R252	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R253	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R255	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R257	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R258	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R259	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R260	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R261	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R262	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R263	1-218-700-11	s	METAL 2.2K 0.50% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R265	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R266	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R268	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R272	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R273	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R274	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R275	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R276	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R277	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R280	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R283	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R284	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R285	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R286	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R289	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R290	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R291	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R292	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R293	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R295	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R296	1-218-688-11	s	METAL 680 0.50% 1/16W
R299	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R300	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R301	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R302	1-218-688-11	s	METAL 680 0.50% 1/16W
R303	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R304	1-218-688-11	s	METAL 680 0.50% 1/16W
R306	1-218-688-11	s	METAL 680 0.50% 1/16W
R307	1-216-808-11	s	METAL, CHIP 82 5% 1/16W
R308	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R309	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R310	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R311	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R313	1-218-688-11	s	METAL 680 0.50% 1/16W
R314	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R315	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R316	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R317	1-218-720-11	s	METAL 15K 0.50% 1/16W
R318	1-218-844-11	s	METAL, CHIP 750 0.50% 1/16W
R319	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R320	1-218-873-11	s	METAL, CHIP 12K 0.50% 1/16W
R321	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R322	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R323	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R324	1-216-864-11	s	METAL, CHIP 0-OHM
R325	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R326	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R327	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R328	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R329	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R330	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R331	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R332	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R333	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R334	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R335	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R336	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R337	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R338	1-216-809-11	s	METAL, CHIP 100 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R339	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R340	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R341	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R342	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R343	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R344	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R345	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R346	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R347	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R349	1-216-816-11	s	METAL, CHIP 390 5% 1/16W
R350	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R352	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R353	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R355	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R356	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R357	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R358	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R359	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R360	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R361	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R362	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R363	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R364	1-218-844-11	s	METAL, CHIP 750 0.50% 1/16W
R365	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R366	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R367	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R368	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R369	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R370	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R371	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R372	1-218-856-11	s	METAL, CHIP 2.4K 0.50% 1/16W
R373	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R374	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R375	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R376	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R377	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R378	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R379	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R380	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R381	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R382	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R383	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R384	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R385	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R386	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R387	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R396	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R397	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R398	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R399	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R400	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R401	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R402	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R403	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R404	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
RV200	1-225-169-11	s	RES, ADJ, METAL 1K
RV201	1-241-833-11	s	RES, ADJ, METAL 10K
RV203	1-241-828-21	s	RES, ADJ, METAL 500
RV204	1-241-828-21	s	RES, ADJ, METAL 500

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Ref. No. or Q'ty	Part No.	SP	Description
RV205	1-241-828-21	s	RES, ADJ, METAL 500
RV206	1-241-828-21	s	RES, ADJ, METAL 500
RV207	1-225-171-11	s	RES, ADJ, METAL 5K
RV208	1-225-170-11	s	RES, ADJ, METAL 3K
RV209	1-241-828-21	s	RES, ADJ, METAL 500
RV210	1-241-828-21	s	RES, ADJ, METAL 500
RV211	1-241-828-21	s	RES, ADJ, METAL 500
RV212	1-241-828-21	s	RES, ADJ, METAL 500
RV213	1-241-828-21	s	RES, ADJ, METAL 500
RV214	1-241-828-21	s	RES, ADJ, METAL 500

MB-613 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-341-A	o	MOUNTED CIRCUIT BOARD, MB-613
C501	1-128-528-11	s	ELECT 470uF 20% 25V
C502	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C503	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C505	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C506	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C507	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C508	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C509	1-135-323-11	s	TANTALUM 6.8uF 20% 35V
C510	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C511	1-115-200-91	s	TANTALUM 33uF 20% 20V
C512	1-115-200-91	s	TANTALUM 33uF 20% 20V
C513	1-107-496-11	s	TANTALUM, CHIP 47uF 20% 16V
C514	1-107-496-11	s	TANTALUM, CHIP 47uF 20% 16V
C515	1-128-528-11	s	ELECT 470uF 20% 25V
C516	1-126-168-11	s	ELECT 1000uF 25% 6.3V
C517	1-104-823-11	s	TANTALUM 47uF 20% 16V
C518	1-135-215-21	s	TANTALUM 6.8uF 20% 16V
C519	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C520	1-162-910-11	s	CERAMIC 5PF 0.25PF 50V
C521	1-135-215-21	s	TANTALUM 6.8uF 20% 16V
C522	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C523	1-162-912-11	s	CERAMIC 7PF 0.5PF 50V
C524	1-135-215-21	s	TANTALUM 6.8uF 20% 16V
C525	1-104-752-11	s	TANTALUM 33uF 20% 6.3V
C526	1-162-910-11	s	CERAMIC 5PF 0.25PF 50V
C530	1-104-563-11	s	FILM 0.1uF 5% 16V
C531	1-135-323-11	s	TANTALUM 6.8uF 20% 35V
C532	1-135-323-11	s	TANTALUM 6.8uF 20% 35V
C533	1-128-528-11	s	ELECT 470uF 20% 25V
CN501	1-691-942-31	o	CONNECTOR, BOARD TO BOARD 30P
CN502	1-568-334-61	s	CONNECTOR, BOARD TO BOARD 16P
CN503	1-568-338-11	s	CONNECTOR, BOARD TO BOARD 24P
CN504	1-568-338-11	s	CONNECTOR, BOARD TO BOARD 24P
CN505	1-568-338-11	s	CONNECTOR, BOARD TO BOARD 24P
CN506	1-568-338-11	s	CONNECTOR, BOARD TO BOARD 24P
CN507	1-691-942-31	o	CONNECTOR, BOARD TO BOARD 30P
CN508	1-565-140-11	s	CONNECTOR, STRAIGHT TP, MALE
CN509	1-568-334-61	s	CONNECTOR, BOARD TO BOARD 16P
CN510	1-568-338-11	s	CONNECTOR, BOARD TO BOARD 24P
CN511	1-568-338-11	s	CONNECTOR, BOARD TO BOARD 24P
CN512	1-766-559-21	s	CONNECTOR, FFC/FPC(NON-ZIF)22P
CN513	1-774-674-11	s	HOUSING, FFC/FPC 20P
D501	8-719-017-33	s	DIODE 02DZ20-TPH3
D502	8-719-421-67	s	DIODE MA132WK
FL501	1-233-499-11	s	FILTER, LC TRAP 14.3MHZ
FL502	1-233-499-11	s	FILTER, LC TRAP 14.3MHZ
FL503	1-233-499-11	s	FILTER, LC TRAP 14.3MHZ
IC501	8-759-050-82	s	IC SN74HCU04APW-E05
IC502	8-759-049-55	s	IC SN74HC00APW-E20
IC503	8-759-076-06	s	IC TL064CPW
IC504	8-759-058-55	s	IC TC7S02FU-TE85R
L501	1-412-026-11	s	INDUCTOR CHIP 1uH
L502	1-410-997-31	s	INDUCTOR CHIP 2.2uH
L503	1-410-997-31	s	INDUCTOR CHIP 2.2uH
L504	1-410-997-31	s	INDUCTOR CHIP 2.2uH
L505	1-410-997-31	s	INDUCTOR CHIP 2.2uH

(MB-613 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
L507	1-412-032-11	s	INDUCTOR CHIP 100uH
L508	1-412-032-11	s	INDUCTOR CHIP 100uH
L509	1-412-030-11	s	INDUCTOR CHIP 22uH
PU501	1-473-508-11	s	CONVERTER, DC-DC
Q501	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q502	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q503	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q504	8-729-118-58	s	TRANSISTOR 2SK852-X4
Q505	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q506	8-729-427-83	s	TRANSISTOR XP6501
Q507	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q508	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q509	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q510	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q511	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q512	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q513	8-729-427-83	s	TRANSISTOR XP6501
Q514	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q515	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q516	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q517	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q518	8-729-118-58	s	TRANSISTOR 2SK852-X4
Q519	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q520	8-729-427-83	s	TRANSISTOR XP6501
Q521	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q522	8-729-427-83	s	TRANSISTOR XP6501
Q523	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q524	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q525	8-729-118-58	s	TRANSISTOR 2SK852-X4
Q526	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q527	8-729-429-63	s	TRANSISTOR 2SC4656-Q
R501	1-216-003-11	s	METAL, CHIP 12 5% 1/10W
R502	1-216-003-11	s	METAL, CHIP 12 5% 1/10W
R503	1-216-003-11	s	METAL, CHIP 12 5% 1/10W
R504	1-216-003-11	s	METAL, CHIP 12 5% 1/10W
R505	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R506	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R507	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R509	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R510	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R511	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R512	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R513	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R514	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R515	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R516	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R517	1-216-850-11	s	METAL, CHIP 270K 5% 1/16W
R518	1-218-842-11	s	METAL, CHIP 620 0.50% 1/16W
R519	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R520	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R521	1-218-846-11	s	METAL, CHIP 910 0.50% 1/16W
R522	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R523	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R524	1-218-722-11	s	METAL 18K 0.50% 1/16W
R525	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R526	1-218-692-11	s	METAL 1K 0.50% 1/16W
R527	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R528	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R530	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R531	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R532	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R533	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R534	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R535	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R536	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R537	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R538	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R539	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R540	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R541	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R542	1-218-722-11	s	METAL 18K 0.50% 1/16W
R543	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R544	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R546	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R547	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R548	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R549	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R550	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R551	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R552	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R553	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R554	1-216-850-11	s	METAL, CHIP 270K 5% 1/16W
R555	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R556	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R557	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R558	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R559	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R560	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R561	1-218-722-11	s	METAL 18K 0.50% 1/16W
R562	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R563	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R564	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R565	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R570	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R571	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R572	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R573	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R574	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R575	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R576	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R577	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R578	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R579	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R580	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R581	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R582	1-216-864-11	s	METAL, CHIP 0-OHM
R584	1-216-295-00	s	METAL, CHIP 0-OHM
R585	1-216-864-11	s	METAL, CHIP 0-OHM
R586	1-216-864-11	s	METAL, CHIP 0-OHM
R588	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R589	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
RV501	1-225-169-11	s	RES, ADJ, METAL 1K
RV502	1-225-169-11	s	RES, ADJ, METAL 1K
RV503	1-225-169-11	s	RES, ADJ, METAL 1K

PR-215 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-333-A	o	MOUNTED CIRCUIT BOARD, PR-215 [for DXC-950, DXC-970MD]
1pc	A-8272-351-A	o	MOUNTED CIRCUIT BOARD, PR-215P [for DXC-950P]
C2	1-164-156-11	s	CERAMIC 0.1uF 25V
C3	1-164-156-11	s	CERAMIC 0.1uF 25V
C4	1-164-156-11	s	CERAMIC 0.1uF 25V
C6	1-164-156-11	s	CERAMIC 0.1uF 25V
C10	1-164-156-11	s	CERAMIC 0.1uF 25V
C11	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C12	1-164-156-11	s	CERAMIC 0.1uF 25V
C13	1-164-156-11	s	CERAMIC 0.1uF 25V
C20	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C21	1-164-156-11	s	CERAMIC 0.1uF 25V
C22	1-164-156-11	s	CERAMIC 0.1uF 25V
C23	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C24	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C25	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C26	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C27	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C28	1-164-156-11	s	CERAMIC 0.1uF 25V
C29	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C30	1-104-852-11	s	TANTALUM 22uF 20% 10V
C31	1-104-852-11	s	TANTALUM 22uF 20% 10V
C32	1-104-852-11	s	TANTALUM 22uF 20% 10V
C33	1-104-852-11	s	TANTALUM 22uF 20% 10V
C34	1-104-852-11	s	TANTALUM 22uF 20% 10V
C35	1-104-852-11	s	TANTALUM 22uF 20% 10V
C36	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C37	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C38	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C41	1-164-156-11	s	CERAMIC 0.1uF 25V
C42	1-164-156-11	s	CERAMIC 0.1uF 25V
C43	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C44	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C45	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C46	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C47	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C48	1-111-253-11	s	TANTALUM 100uF 20% 6.3V
C49	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C50	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C51	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C52	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C53	1-111-253-11	s	TANTALUM 100uF 20% 6.3V
C54	1-164-156-11	s	CERAMIC 0.1uF 25V
C55	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C56	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C57	1-164-156-11	s	CERAMIC 0.1uF 25V
C58	1-107-686-11	s	TANTAL 4.7uF 20% 16V
C59	1-164-156-11	s	CERAMIC 0.1uF 25V
C60	1-107-686-11	s	TANTAL 4.7uF 20% 16V
C62	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C64	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C65	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C66	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C67	1-104-913-11	s	TANTAL 10uF 20% 16V
C68	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C70	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C71	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V

(PR-215 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C72	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C74	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C75	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C76	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C78	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C79	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C80	1-164-156-11	s	CERAMIC 0.1uF 25V
C81	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C82	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C83	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C84	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C85	1-164-156-11	s	CERAMIC 0.1uF 25V
C86	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C87	1-107-686-11	s	TANTAL 4.7uF 20% 16V
C88	1-104-852-11	s	TANTAL 22uF 20% 10V
C89	1-104-913-11	s	TANTAL 10uF 20% 16V
C90	1-107-686-11	s	TANTAL 4.7uF 20% 16V
C91	1-104-913-11	s	TANTAL 10uF 20% 16V
C92	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C93	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C94	1-162-925-11	s	CERAMIC, CHIP 68PF 5% 50V
C95	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C96	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C97	1-104-852-11	s	TANTAL 22uF 20% 10V
C98	1-107-686-11	s	TANTAL 4.7uF 20% 16V
C99	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C100	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C101	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C102	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C103	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V [for DXC-950, DXC-970MD]
C103	1-162-925-11	s	CERAMIC, CHIP 68PF 5% 50V [for DXC-950P]
C105	1-107-688-11	s	TANTALUM 1.5uF 20% 25V
C107	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C108	1-162-920-11	s	CERAMIC, CHIP 27PF 5% 50V
C109	1-162-920-11	s	CERAMIC, CHIP 27PF 5% 50V
C110	1-164-315-11	s	CERAMIC 470PF 5% 50V
C111	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C112	1-104-913-11	s	TANTAL 10uF 20% 16V
C113	1-164-156-11	s	CERAMIC 0.1uF 25V
C114	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C115	1-104-752-11	s	TANTAL 33uF 20% 6.3V
C116	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C117	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C118	1-164-156-11	s	CERAMIC 0.1uF 25V
C119	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C120	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C121	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C122	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C123	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C124	1-164-156-11	s	CERAMIC 0.1uF 25V
C125	1-164-156-11	s	CERAMIC 0.1uF 25V
C126	1-162-916-11	s	CERAMIC, CHIP 12PF 5% 50V
C127	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C128	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V [for DXC-950P]
C129	1-104-913-11	s	TANTAL 10uF 20% 16V
C130	1-104-852-11	s	TANTAL 22uF 20% 10V

(PR-215 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C132	1-164-156-11	s	CERAMIC 0.1uF 25V
C133	1-164-156-11	s	CERAMIC 0.1uF 25V
C134	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C135	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C136	1-104-913-11	s	TANTAL 10uF 20% 16V
C137	1-162-918-11	s	CERAMIC, CHIP 18PF 5% 50V
C138	1-162-918-11	s	CERAMIC, CHIP 18PF 5% 50V
C139	1-162-918-11	s	CERAMIC, CHIP 18PF 5% 50V
C140	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C141	1-104-852-11	s	TANTAL 22uF 20% 10V
C142	1-104-914-11	s	TANTALUM, CHIP 22uF 20% 16V
C143	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C144	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C145	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C146	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C147	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C148	1-135-179-21	s	TANTALUM 2.2uF 20% 16V
C149	1-135-179-21	s	TANTALUM 2.2uF 20% 16V
C150	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C151	1-110-569-11	s	TANTAL 47uF 20% 6.3V
C152	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C153	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C154	1-107-687-11	s	TANTAL 3.3uF 20% 20V
C155	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C156	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
CN1	1-568-366-41	s	CONNECTOR, BOARD TO BOARD 16P
CN2	1-569-607-11	s	CONNECTOR, BOARD TO BOARD 24P
CN3	1-569-607-11	s	CONNECTOR, BOARD TO BOARD 24P
D1	8-719-421-67	s	DIODE MA132WK
D2	8-719-421-67	s	DIODE MA132WK
D3	8-719-421-67	s	DIODE MA132WK
D4	8-719-421-67	s	DIODE MA132WK
D5	8-719-421-67	s	DIODE MA132WK
D6	8-719-421-67	s	DIODE MA132WK
DL1	1-415-730-21	s	DELAY LINE, LC 100nS
DL2	1-415-730-21	s	DELAY LINE, LC 100nS
DL3	1-415-730-21	s	DELAY LINE, LC 100nS
DL4	1-415-864-21	s	DELAY LINE, LC
DL5	1-415-763-21	s	DELAY LINE, LC
DL6	1-415-730-21	s	DELAY LINE, LC 100nS
DL7	1-415-730-21	s	DELAY LINE, LC 100nS
DL8	1-415-730-21	s	DELAY LINE, LC 100nS
FL1	1-239-212-21	s	FILTER, BANDPASS [for DXC-950, DXC-970MD]
FL1	1-239-211-21	s	FILTER, BANDPASS [for DXC-950P]
IC1	8-759-066-59	s	IC TC74HC4053AFS
IC2	8-759-076-06	s	IC TL064CFW
IC6	8-759-082-60	s	IC TC7S66FU
IC8	8-759-082-60	s	IC TC7S66FU
IC12	8-759-082-58	s	IC TC7W08FU [for DXC-950P]
IC13	8-759-173-16	s	IC TL062CFW
IC14	8-759-079-60	s	IC TC74VHC32FS(EL)
IC15	8-759-288-20	s	IC CXD8924Q
IC16	8-759-059-00	s	IC UPC2372AGK
IC17	8-759-635-27	s	IC M62352GP-E1
IC18	8-759-635-27	s	IC M62352GP-E1
IC19	8-759-635-27	s	IC M62352GP-E1

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Ref. No. or Q'ty	Part No.	SP	Description
IC20	8-759-906-59	s	IC CX22017
IC21	8-759-058-58	s	IC TC7S04FU(TE85R)
IC22	8-752-056-59	s	IC CXA1592R
IC23	8-759-058-58	s	IC TC7S04FU(TE85R)
IC24	8-759-079-52	s	IC TC74VHC08FS(EL)
IC25	8-759-079-52	s	IC TC74VHC08FS(EL) [for DXC-950, DXC-970MD]
IC26	8-759-271-18	s	IC NJM1496V
L1	1-414-119-11	s	INDUCTOR 22uH
L2	1-414-119-11	s	INDUCTOR 22uH
L3	1-414-119-11	s	INDUCTOR 22uH
L4	1-412-030-11	s	INDUCTOR CHIP 22uH
L8	1-414-119-11	s	INDUCTOR 22uH
L9	1-414-119-11	s	INDUCTOR 22uH
L10	1-414-119-11	s	INDUCTOR 22uH
L11	1-412-034-11	s	INDUCTOR CHIP 330uH
L12	1-412-034-11	s	INDUCTOR CHIP 330uH
L13	1-412-030-11	s	INDUCTOR CHIP 22uH
L14	1-414-119-11	s	INDUCTOR 22uH
L15	1-412-030-11	s	INDUCTOR CHIP 22uH
L16	1-414-119-11	s	INDUCTOR 22uH
L17	1-414-119-11	s	INDUCTOR 22uH
LV1	1-414-071-21	s	COIL, VAR
Q1	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q2	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q3	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q4	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q5	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q6	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q7	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q8	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q12	8-729-429-98	s	TRANSISTOR XP1401
Q13	8-729-427-83	s	TRANSISTOR XP6501
Q14	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q15	8-729-427-74	s	TRANSISTOR XP4601
Q16	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q17	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q18	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q19	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q20	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q21	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q22	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q23	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q24	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q25	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q26	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q27	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q28	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q29	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q30	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q31	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q32	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q33	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q34	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q35	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q36	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q37	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q38	8-729-429-63	s	TRANSISTOR 2SC4656-Q

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Ref. No. or Q'ty	Part No.	SP	Description
Q39	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q40	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q41	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q42	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q43	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q44	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q48	8-729-144-56	s	TRANSISTOR 2SC3617
Q49	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q50	8-729-117-32	s	TRANSISTOR 2SC4177
Q51	8-729-117-32	s	TRANSISTOR 2SC4177
Q52	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q53	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q54	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q55	8-729-427-83	s	TRANSISTOR XP6501
Q56	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q57	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q58	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q59	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q60	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q61	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q62	8-729-427-83	s	TRANSISTOR XP6501
Q63	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q64	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q65	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q66	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q67	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q68	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q69	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q70	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q71	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q72	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q73	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q74	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q75	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q79	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q80	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q81	8-729-429-67	s	TRANSISTOR 2SA1791-Q
Q82	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q83	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q84	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q85	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q86	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q87	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q89	8-729-429-63	s	TRANSISTOR 2SC4656-Q
Q90	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q91	8-729-425-76	s	TRANSISTOR 2SC4627-D(TXE)
Q92	8-729-429-67	s	TRANSISTOR 2SA1791-Q
R1	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R2	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R5	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R6	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R7	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R8	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R9	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R10	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R11	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R12	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R13	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R20	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R22	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R23	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R24	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R25	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R26	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R27	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R28	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R29	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R30	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R31	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R32	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R33	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R34	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R35	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R36	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R37	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R38	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R39	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R40	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R41	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R42	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R43	1-216-864-11	s	METAL, CHIP 0-OHM
R44	1-216-864-11	s	METAL, CHIP 0-OHM
R46	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R47	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R48	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R49	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R50	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R51	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R52	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R53	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R54	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R55	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R56	1-216-864-11	s	METAL, CHIP 0-OHM
R57	1-216-864-11	s	METAL, CHIP 0-OHM
R58	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R59	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R60	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R61	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R62	1-216-808-11	s	METAL, CHIP 82 5% 1/16W
R63	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R64	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R65	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R66	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R68	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R69	1-216-864-11	s	METAL, CHIP 0-OHM
R70	1-216-864-11	s	METAL, CHIP 0-OHM
R71	1-216-808-11	s	METAL, CHIP 82 5% 1/16W
R72	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R73	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R74	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R75	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R76	1-218-692-11	s	METAL 1K 0.50% 1/16W
R77	1-218-705-11	s	METAL 3.6K 0.50% 1/16W
R78	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R79	1-218-668-11	s	METAL 100 0.50% 1/16W
R80	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R81	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R82	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R83	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R84	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R85	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R86	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R87	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R88	1-218-692-11	s	METAL 1K 0.50% 1/16W
R89	1-218-705-11	s	METAL 3.6K 0.50% 1/16W
R90	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R91	1-218-668-11	s	METAL 100 0.50% 1/16W
R92	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R93	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R94	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R95	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R96	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R97	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R98	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R99	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R100	1-218-692-11	s	METAL 1K 0.50% 1/16W
R101	1-218-705-11	s	METAL 3.6K 0.50% 1/16W
R102	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R103	1-218-668-11	s	METAL 100 0.50% 1/16W
R104	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R105	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R106	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R107	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R108	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R109	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R110	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R111	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R121	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R126	1-218-749-11	s	METAL 240K 0.50% 1/16W [for DXC-950, DXC-970MD]
R127	1-218-870-11	s	METAL, CHIP 9.1K 0.50% 1/16W [for DXC-950, DXC-970MD]
R127	1-218-729-11	s	METAL 36K 0.50% 1/16W [for DXC-950P]
R128	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R129	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R130	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R131	1-218-749-11	s	METAL 240K 0.50% 1/16W [for DXC-950, DXC-970MD]
R132	1-218-870-11	s	METAL, CHIP 9.1K 0.50% 1/16W [for DXC-950, DXC-970MD]
R132	1-218-729-11	s	METAL 36K 0.50% 1/16W [for DXC-950P]
R137	1-218-749-11	s	METAL 240K 0.50% 1/16W [for DXC-950, DXC-970MD]
R138	1-218-870-11	s	METAL, CHIP 9.1K 0.50% 1/16W [for DXC-950, DXC-970MD]
R138	1-218-729-11	s	METAL 36K 0.50% 1/16W [for DXC-950P]
R139	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R140	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R141	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R142	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]
R143	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R144	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R145	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R146	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R147	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W [for DXC-950, DXC-970MD]
R148	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R149	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R150	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R151	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R152	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R153	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R154	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R155	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R156	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R158	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R162	1-218-706-11	s	METAL 3.9K 0.50% 1/16W
R164	1-218-722-11	s	METAL 18K 0.50% 1/16W [for DXC-950, DXC-970MD]
R164	1-218-721-11	s	METAL 16K 0.50% 1/16W [for DXC-950P]
R165	1-218-858-11	s	METAL, CHIP 3K 0.50% 1/16W
R166	1-218-867-11	s	METAL, CHIP 6.8K 0.50% 1/16W [for DXC-950, DXC-970MD]
R166	1-218-710-11	s	METAL 5.6K 0.50% 1/16W [for DXC-950P]
R167	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R168	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R169	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R170	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R171	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R173	1-218-724-11	s	METAL 22K 0.50% 1/16W
R174	1-218-717-11	s	METAL 11K 0.50% 1/16W
R176	1-216-864-11	s	METAL, CHIP 0-OHM
R178	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R179	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R180	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R181	1-218-858-11	s	METAL, CHIP 3K 0.50% 1/16W
R182	1-218-702-11	s	METAL 2.7K 0.50% 1/16W
R183	1-218-858-11	s	METAL, CHIP 3K 0.50% 1/16W
R184	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R185	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R186	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R187	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R188	1-218-724-11	s	METAL 22K 0.50% 1/16W
R189	1-218-724-11	s	METAL 22K 0.50% 1/16W
R190	1-218-724-11	s	METAL 22K 0.50% 1/16W
R191	1-218-881-11	s	METAL, CHIP 27K 0.50% 1/16W
R192	1-218-724-11	s	METAL 22K 0.50% 1/16W
R193	1-218-724-11	s	METAL 22K 0.50% 1/16W
R194	1-218-724-11	s	METAL 22K 0.50% 1/16W
R195	1-218-881-11	s	METAL, CHIP 27K 0.50% 1/16W
R196	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R197	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R198	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R199	1-218-253-11	s	METAL 2.32K 0.50% 1/10W [for DXC-950, DXC-970MD]
R199	1-218-259-11	s	METAL 13.7K 0.50% 1/10W [for DXC-950P]
R200	1-218-255-11	s	METAL 2.67K 0.50% 1/10W [for DXC-950, DXC-970MD]
R200	1-218-254-11	s	METAL 2.55K 0.50% 1/10W [for DXC-950P]

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Ref. No. or Q'ty	Part No.	SP	Description
R201	1-218-699-11	s	METAL 2K 0.50% 1/16W
R202	1-218-692-11	s	METAL 1K 0.50% 1/16W
R203	1-218-692-11	s	METAL 1K 0.50% 1/16W
R204	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R205	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R206	1-218-702-11	s	METAL 2.7K 0.50% 1/16W
R207	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R208	1-218-699-11	s	METAL 2K 0.50% 1/16W
R209	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W [for DXC-950, DXC-970MD]
R209	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W [for DXC-950P]
R210	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R211	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R212	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R213	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R214	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R215	1-218-840-11	s	METAL 510 0.50% 1/16W
R216	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R217	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R218	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R219	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R220	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R221	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R222	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R223	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R224	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R225	1-218-700-11	s	METAL 2.2K 0.50% 1/16W [for DXC-950, DXC-970MD]
R226	1-218-254-11	s	METAL 2.55K 0.50% 1/10W [for DXC-950P]
R227	1-218-257-11	s	METAL 4.99K 0.50% 1/10W [for DXC-950P]
R228	1-218-256-11	s	METAL 3.32K 0.50% 1/10W [for DXC-950, DXC-970MD]
R229	1-218-252-11	s	METAL 2.26K 0.50% 1/10W [for DXC-950, DXC-970MD]
R230	1-218-700-11	s	METAL 2.2K 0.50% 1/16W [for DXC-950P]
R231	1-218-699-11	s	METAL 2K 0.50% 1/16W
R232	1-218-694-11	s	METAL 1.2K 0.50% 1/16W [for DXC-950, DXC-970MD]
R232	1-218-851-11	s	METAL, CHIP 1.5K 0.50% 1/16W [for DXC-950P]
R233	1-218-694-11	s	METAL 1.2K 0.50% 1/16W [for DXC-950, DXC-970MD]
R233	1-218-851-11	s	METAL, CHIP 1.5K 0.50% 1/16W [for DXC-950P]
R234	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R235	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R236	1-218-702-11	s	METAL 2.7K 0.50% 1/16W
R237	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R238	1-218-699-11	s	METAL 2K 0.50% 1/16W
R239	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W [for DXC-950, DXC-970MD]
R239	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W [for DXC-950P]
R240	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R241	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R242	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R243	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W

(PR-215 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R244	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R245	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R246	1-218-840-11	s	METAL 510 0.50% 1/16W
R247	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R248	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R249	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R250	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R251	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R252	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R253	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R254	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R255	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R256	1-218-697-11	s	METAL 1.6K 0.50% 1/16W
R257	1-218-840-11	s	METAL 510 0.50% 1/16W
R258	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W [for DXC-950, DXC-970MD]
R260	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R261	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R262	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R263	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R264	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R265	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R266	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R267	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R268	1-218-704-11	s	METAL 3.3K 0.50% 1/16W
R269	1-218-704-11	s	METAL 3.3K 0.50% 1/16W
R270	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R271	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R272	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R273	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R274	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R275	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R276	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R277	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R278	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R285	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R286	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]
R287	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R292	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R293	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R294	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R295	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R296	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R297	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R298	1-218-846-11	s	METAL, CHIP 910 0.50% 1/16W
R300	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R301	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R302	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R303	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R304	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R305	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W [for DXC-950P]
R309	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R316	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R317	1-216-808-11	s	METAL, CHIP 82 5% 1/16W
R318	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R319	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R320	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R321	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R322	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R323	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R324	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R325	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R326	1-216-864-11	s	METAL, CHIP 0-OHM
R327	1-218-688-11	s	METAL 680 0.50% 1/16W
R328	1-218-688-11	s	METAL 680 0.50% 1/16W
R329	1-218-688-11	s	METAL 680 0.50% 1/16W
R331	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]
R331	1-216-814-11	s	METAL, CHIP 270 5% 1/16W [for DXC-950P]
R335	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R343	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R344	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R345	1-218-708-11	s	METAL 4.7K 0.50% 1/16W
R346	1-218-740-11	s	METAL 100K 0.50% 1/16W
R347	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R348	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R349	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R350	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R352	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R353	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R354	1-218-720-11	s	METAL 15K 0.50% 1/16W
R355	1-218-721-11	s	METAL 16K 0.50% 1/16W
R356	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R357	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R358	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R368	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R371	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R372	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R373	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R374	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R375	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R376	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R377	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R378	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R379	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R381	1-216-864-11	s	METAL, CHIP 0-OHM
R382	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R383	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R384	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R385	1-249-434-11	s	CARBON 27K 5% 1/4W
R386	1-216-864-11	s	METAL, CHIP 0-OHM
R387	1-216-864-11	s	METAL, CHIP 0-OHM
RV1	1-241-833-11	s	RES, ADJ, METAL 10K
RV2	1-241-833-11	s	RES, ADJ, METAL 10K
RV3	1-241-833-11	s	RES, ADJ, METAL 10K
RV4	1-241-833-11	s	RES, ADJ, METAL 10K
RV5	1-241-833-11	s	RES, ADJ, METAL 10K
RV6	1-241-833-11	s	RES, ADJ, METAL 10K
RV7	1-241-832-21	s	RES, ADJ, METAL 5K
RV8	1-241-830-11	s	RES, ADJ, METAL 2K
RV9	1-241-829-21	s	RES, ADJ, METAL 1K
RV10	1-241-832-21	s	RES, ADJ, METAL 5K
RV11	1-241-829-21	s	RES, ADJ, METAL 1K
RV12	1-241-832-21	s	RES, ADJ, METAL 5K
RV13	1-241-829-21	s	RES, ADJ, METAL 1K

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Ref. No. or Q'ty	Part No.	SP	Description
RV14	1-241-830-11	s	RES, ADJ, METAL 2K
RV15	1-241-830-11	s	RES, ADJ, METAL 2K
RV16	1-241-830-11	s	RES, ADJ, METAL 2K
RV17	1-241-833-11	s	RES, ADJ, METAL 10K
RV18	1-241-829-21	s	RES, ADJ, METAL 1K
TH1	1-810-032-21	s	THERMISTOR NTH5G29A221K01TE
TH2	1-810-032-21	s	THERMISTOR NTH5G29A221K01TE
TH3	1-810-032-21	s	THERMISTOR NTH5G29A221K01TE

SG-236 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-337-A	o	MOUNTED CIRCUIT BOARD, SG-236 [for DXC-950, DXC-970MD]
1pc	A-8272-355-A	o	MOUNTED CIRCUIT BOARD, SG-236P [for DXC-950P]
C1	1-104-913-11	s	TANTALUM 10uF 20% 16V
C2	1-164-227-11	s	CERAMIC 0.022uF 10% 25V
C3	1-104-913-11	s	TANTALUM 10uF 20% 16V
C4	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C5	1-164-156-11	s	CERAMIC 0.1uF 25V
C6	1-104-913-11	s	TANTALUM 10uF 20% 16V
C7	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C8	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C9	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C10	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C11	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C12	1-162-920-11	s	CERAMIC, CHIP 27PF 5% 50V
C13	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C14	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C15	1-162-918-11	s	CERAMIC, CHIP 18PF 5% 50V [for DXC-950, DXC-970MD]
C15	1-162-916-11	s	CERAMIC, CHIP 12PF 5% 50V [for DXC-950P]
C16	1-135-190-21	s	TANTALUM 0.1uF 20% 20V
C17	1-135-190-21	s	TANTALUM 0.1uF 20% 20V
C18	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C19	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C20	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 20V
C21	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C22	1-135-166-21	s	TANTALUM, CHIP 47uF 10% 10V
C23	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C24	1-107-686-11	s	TANTALUM 4.7uF 20% 16V
C25	1-164-156-11	s	CERAMIC 0.1uF 25V
C26	1-104-913-11	s	TANTALUM 10uF 20% 16V
C27	1-104-913-11	s	TANTALUM 10uF 20% 16V
C28	1-164-156-11	s	CERAMIC 0.1uF 25V
C29	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C30	1-164-156-11	s	CERAMIC 0.1uF 25V
C31	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C32	1-164-156-11	s	CERAMIC 0.1uF 25V
C33	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C34	1-135-166-21	s	TANTALUM, CHIP 47uF 10% 10V
C35	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C36	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C37	1-162-915-11	s	CERAMIC, CHIP 10PF 5PF 50V
C38	1-164-363-11	s	CERAMIC 560PF 5% 50V
C39	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C40	1-164-677-11	s	CERAMIC 0.033uF 10% 16V
C41	1-135-215-21	s	TANTALUM 6.8uF 20% 16V
C42	1-135-215-21	s	TANTALUM 6.8uF 20% 16V
C43	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C44	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C45	1-164-156-11	s	CERAMIC 0.1uF 25V
C46	1-164-156-11	s	CERAMIC 0.1uF 25V
C47	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C48	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C49	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C50	1-135-190-21	s	TANTALUM 0.1uF 20% 20V
C51	1-135-190-21	s	TANTALUM 0.1uF 20% 20V
C52	1-162-918-11	s	CERAMIC, CHIP 18PF 5% 50V

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Ref. No. or Q'ty	Part No.	SP	Description
C53	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C54	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C55	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C56	1-162-957-11	s	CERAMIC 220PF 5% 50V
C57	1-162-957-11	s	CERAMIC 220PF 5% 50V
C58	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C59	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C60	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C61	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C62	1-135-210-11	s	TANTALUM 4.7uF 20% 10V
C63	1-164-315-11	s	CERAMIC 470PF 5% 50V
C65	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C66	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C67	1-164-156-11	s	CERAMIC 0.1uF 25V
CN1	1-691-943-41	o	CONNECTOR, BOARD TO BOARD 30P
CP1	1-760-278-11	s	OSCILLATOR, CRYSTAL 28.63636MHz [for DXC-950, DXC-970MD]
CP1	1-760-276-11	s	OSCILLATOR, CRYSTAL 28.375MHz [for DXC-950P]
CP2	1-760-267-11	s	OSCILLATOR, CRYSTAL 14.31818MHz [for DXC-950, DXC-970MD]
CP2	1-760-269-11	s	OSCILLATOR, CRYSTAL 17.734475MHz [for DXC-950P]
D1	8-719-800-76	s	DIODE 1SS226
D2	8-719-800-76	s	DIODE 1SS226
D3	8-719-800-76	s	DIODE 1SS226
IC1	8-759-100-96	s	IC UPC4558G2
IC2	8-759-300-71	s	IC HD14053BFP
IC3	8-759-300-71	s	IC HD14053BFP
IC4	8-759-987-27	s	IC LM1881M
IC5	8-759-702-08	s	IC NJM360M
IC6	8-752-335-47	s	IC CXD1216M
IC7	8-759-234-77	s	IC TC4S66F
IC8	8-759-936-53	s	IC TL062CFS
IC10	8-752-332-67	s	IC CXD1217M
IC11	8-759-008-45	s	IC MC74HC4538F
IC12	8-759-510-71	s	IC BA10358F-E2
IC13	8-759-902-88	s	IC SN74LS123NS
IC14	8-759-209-57	s	IC TC4S69F
L2	1-412-031-11	s	INDUCTOR CHIP 47uH
L3	1-412-032-11	s	INDUCTOR CHIP 100uH
L4	1-412-031-11	s	INDUCTOR CHIP 47uH
Q1	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q2	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q3	8-729-117-32	s	TRANSISTOR 2SC4177
Q4	8-729-926-19	s	TRANSISTOR 2SC4103-Q
Q5	8-729-422-44	s	TRANSISTOR 2SK663
Q6	8-729-117-32	s	TRANSISTOR 2SC4177 [for DXC-950, DXC-970MD]
Q7	8-729-117-16	s	TRANSISTOR 2SA1611-M6 [for DXC-950, DXC-970MD]
Q8	8-729-117-16	s	TRANSISTOR 2SA1611-M6
Q9	8-729-117-32	s	TRANSISTOR 2SC4177
Q10	8-729-117-32	s	TRANSISTOR 2SC4177
Q11	8-729-117-32	s	TRANSISTOR 2SC4177
Q12	8-729-117-32	s	TRANSISTOR 2SC4177
R1	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W

(SG-236 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R2	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R3	1-216-801-11	s	METAL, CHIP 22 0.50% 1/16W
R4	1-211-990-11	s	METAL, CHIP 75 0.50% 1/16W
R5	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R6	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R7	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R8	1-216-851-11	s	METAL, CHIP 330K 5% 1/16W
R9	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R10	1-218-725-11	s	METAL 24K 0.50% 1/16W
R11	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R12	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R13	1-218-868-11	s	METAL, CHIP 7.5K 0.50% 1/16W
R14	1-218-695-11	s	METAL 1.3K 0.50% 1/16W
R15	1-218-840-11	s	METAL 510 0.50% 1/16W
R16	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R17	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R18	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R19	1-216-842-11	s	METAL, CHIP 56K 5% 1/16W
R20	1-218-702-11	s	METAL 2.7K 0.50% 1/16W
R21	1-218-714-11	s	METAL 8.2K 0.50% 1/16W
R22	1-216-855-11	s	METAL, CHIP 680K 5% 1/16W
R23	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R24	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R25	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R26	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R28	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R29	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R30	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]
R31	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R32	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]
R33	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R34	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R35	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R36	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R37	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R38	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R39	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R40	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R41	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R42	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R43	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R44	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R45	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R46	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W [for DXC-950, DXC-970MD]
R47	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W [for DXC-950, DXC-970MD]
R48	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W [for DXC-950, DXC-970MD]
R49	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R50	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R51	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R52	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R53	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R54	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R55	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R56	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R57	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]

(SG-236 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R58	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R59	1-218-740-11	s	METAL 100K 0.50% 1/16W
R60	1-218-883-11	s	METAL, CHIP 33K 0.50% 1/16W
R61	1-218-723-11	s	METAL 20K 0.50% 1/16W
R62	1-218-856-11	s	METAL, CHIP 2.4K 0.50% 1/16W
R63	1-218-717-11	s	METAL 11K 0.50% 1/16W
R64	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R65	1-218-668-11	s	METAL 100 0.50% 1/16W
R66	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R67	1-218-668-11	s	METAL 100 0.50% 1/16W
R68	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R69	1-218-881-11	s	METAL, CHIP 27K 0.50% 1/16W
R70	1-218-730-11	s	METAL 39K 0.50% 1/16W
R71	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R72	1-218-723-11	s	METAL 20K 0.50% 1/16W [for DXC-950, DXC-970MD]
R72	1-218-721-11	s	METAL 16K 0.50% 1/16W [for DXC-950P]
R73	1-218-716-11	s	METAL 10K 0.50% 1/16W
R74	1-218-727-11	s	METAL 30K 0.50% 1/16W [for DXC-950, DXC-970MD]
R74	1-218-732-11	s	METAL 47K 0.50% 1/16W [for DXC-950P]
R75	1-218-716-11	s	METAL 10K 0.50% 1/16W
R76	1-218-716-11	s	METAL 10K 0.50% 1/16W
R77	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R78	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R79	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R80	1-218-700-11	s	METAL 2.2K 0.50% 1/16W
R81	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R82	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R83	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R84	1-218-716-11	s	METAL 10K 0.50% 1/16W
R85	1-218-858-11	s	METAL, CHIP 3K 0.50% 1/16W [for DXC-950, DXC-970MD]
R85	1-218-727-11	s	METAL 30K 0.50% 1/16W [for DXC-950P]
R86	1-218-868-11	s	METAL, CHIP 7.5K 0.50% 1/16W
R87	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R88	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R89	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R90	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R91	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R92	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R93	1-216-826-11	s	METAL, CHIP 2.7K 5% 1/16W
R94	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R95	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R96	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R97	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R98	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
RV1	1-238-856-11	s	RES, ADJ, METAL 10K

TG-160 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8272-343-A	o	MOUNTED CIRCUIT BOARD, TG-160 [for DXC-950, DXC-970MD]
1pc	A-8272-350-A	o	MOUNTED CIRCUIT BOARD, TG-160P [for DXC-950P]
C401	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C402	1-164-156-11	s	CERAMIC 0.1uF 25V
C403	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C404	1-164-156-11	s	CERAMIC 0.1uF 25V
C405	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C406	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C408	1-164-156-11	s	CERAMIC 0.1uF 25V
C411	1-164-156-11	s	CERAMIC 0.1uF 25V
C412	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C413	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C414	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C415	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C416	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C417	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C418	1-164-156-11	s	CERAMIC 0.1uF 25V
C419	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C420	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C421	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C422	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C423	1-164-156-11	s	CERAMIC 0.1uF 25V
C426	1-164-156-11	s	CERAMIC 0.1uF 25V
C427	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C428	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C429	1-164-156-11	s	CERAMIC 0.1uF 25V
C430	1-164-156-11	s	CERAMIC 0.1uF 25V
C433	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C434	1-164-156-11	s	CERAMIC 0.1uF 25V
C435	1-164-156-11	s	CERAMIC 0.1uF 25V
C436	1-164-156-11	s	CERAMIC 0.1uF 25V
C437	1-107-689-21	s	TANTALUM 1uF 10% 35V
C438	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C439	1-104-916-11	s	TANTALUM 6.8uF 20% 20V
C440	1-164-156-11	s	CERAMIC 0.1uF 25V
C441	1-164-156-11	s	CERAMIC 0.1uF 25V
C442	1-107-689-21	s	TANTALUM 1uF 10% 35V
C443	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C444	1-104-916-11	s	TANTALUM 6.8uF 20% 20V
C445	1-164-156-11	s	CERAMIC 0.1uF 25V
C446	1-164-156-11	s	CERAMIC 0.1uF 25V
C447	1-107-689-21	s	TANTALUM 1uF 10% 35V
C448	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C449	1-104-916-11	s	TANTALUM 6.8uF 20% 20V
C450	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C451	1-164-156-11	s	CERAMIC 0.1uF 25V
CN401	1-691-943-41	o	CONNECTOR, BOARD TO BOARD 30P
CN402	1-573-350-11	o	CONNECETOR, FFC/FPC 10P
CN403	1-573-366-21	s	CONNECTOR, FPC/FPC 26P
CN404	1-573-366-21	s	CONNECTOR, FPC/FPC 26P
D401	8-719-404-40	s	DIODE MA121
D402	8-719-421-67	s	DIODE MA132WK
D403	8-719-404-40	s	DIODE MA121
D404	8-719-421-67	s	DIODE MA132WK
D405	8-719-404-40	s	DIODE MA121
D406	8-719-421-67	s	DIODE MA132WK

(TG-160 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
IC401	8-752-351-03	s	IC CXD1256AR
IC402	8-759-049-98	s	IC SN74HC74APW-E05
IC403	8-759-049-55	s	IC SN74HC00APW-E20
IC404	8-752-351-03	s	IC CXD1256AR
IC405	8-759-234-20	s	IC TC7S08F
IC406	8-759-247-51	s	IC TC74AC04FS-EL
IC407	8-752-372-14	s	IC CXD1267AN
IC408	8-752-372-14	s	IC CXD1267AN
IC409	8-752-372-14	s	IC CXD1267AN
IC410	8-759-635-27	s	IC M62352GP-E1
IC411	8-759-058-64	s	IC TC7S32FU(TE85R)
IC412	8-759-058-64	s	IC TC7S32FU(TE85R)
L401	1-412-030-11	s	INDUCTOR CHIP 22uH
L402	1-412-032-11	s	INDUCTOR CHIP 100uH
Q404	8-729-117-16	s	TRANSISTOR 2SA1611-M6
R401	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950P]
R402	1-216-864-11	s	METAL, CHIP 0-OHM [for DXC-950, DXC-970MD]
R403	1-216-864-11	s	METAL, CHIP 0-OHM
R408	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R409	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R410	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R411	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R412	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R413	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R414	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R419	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R420	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R421	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R422	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R423	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R424	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R425	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R426	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R427	1-216-864-11	s	METAL, CHIP 0-OHM
R428	1-216-864-11	s	METAL, CHIP 0-OHM
R431	1-216-864-11	s	METAL, CHIP 0-OHM
R432	1-216-864-11	s	METAL, CHIP 0-OHM

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-547-463-11	o	FILTER UNIT, OPTICAL [for DXC-950, DXC-950P]
1pc	1-547-904-11	o	FILTER UNIT, OPTICAL [for DXC-970MD]
CN601	1-774-806-11	s	CONNECTOR, ROUND TYPE 8P, FEMALE "REMOTE"
CN602	1-562-222-21	s	CONNECTOR, 6P, FEMALE "LENS"
CN603	1-691-629-11	s	CONNECTOR, ROUND TYPE 20P, MALE "CCU"
CN604	1-580-090-11	s	CONNECTOR, D-SUB 9P, FEMALE "RGB/SYNC"
CN605	1-562-381-00	s	CONNECTOR, ROUND TYPE 12P, MALE "DC IN/REMOTE"
CN607	1-580-724-21	s	CONNECTOR, BNC "GENLOCK"
CN608	1-580-724-21	s	CONNECTOR, BNC "VIDEO"
CN609	1-569-084-12	s	CONNECTOR, SYNCHRONIZE, FEMALE "FLASH"

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
2pcs	3-175-850-03	o	CUSHION
1pc	△3-810-211-01	s	MANUAL, INSTRUCTION [for DXC-950]
1pc	3-810-211-11	s	MANUAL, INSTRUCTION [for DXC-950P]
1pc	△3-810-212-01	s	MANUAL, INSTRUCTION[for DXC-970MD]